SEPTEMBER 21, 1959

PAPER TRADE JOURNAL

Read The Answers to . . .

What Are Present Solids Removal Practices In 15 Southern Mills?

How Has The Paper Industry Fared In Red China These Past 9 Years?

Does Continuous Cold Soda Pulping Result In Superior Hardwood Pulps?

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PUNCTUALITY

...when Gottesman enters the picture!
Pulp shipments that always leave on schedule:
only one small aspect of expert Gottesman
service, but *so* crucial to pulp buyers.
The assurance of punctuality,
regardless of pulp grade or quantity,
is *one* reason so many of our customers
have been with us for over 40 years!

Established 1886
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CENTRAL NATIONAL COMMERCIAL COMPANY, INC.
100 PARK AVENUE, NEW YORK 17, N. Y.
Gottesman & Company Aktiebolag, Stockholm, Sweden
Central National-Gottesman Limited, London, England
Representatives in 55 Leading World Markets

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Ann Arbor, Mich.

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This is a Dowell Service Engineer. He is an expert in the use of chemical solvents to remove scale and sludge from your process systems, boilers, tanks and piping.

Using the exclusive Dowell methods of chemical cleaning, this engineer can free up the profits that these deposits cut from your operating ledger.

More than 15 years experience in all industries—for example, oil refining, chemical, steel, public utilities and paper—give Dowell engineers full knowledge of the problems of cleaning plant equipment.

Add to this experience the benefits you get in special equipment, chemicals, research and trained people.

Put this ability and experience to work for you. Let the Dowell man engineer a profitable chemical cleaning program for you. Dowell—the largest, the oldest, the most experienced chemical cleaning service—Tulsa 1, Oklahoma; and 165 stations and offices in major industrial centers.

Chemical cleaning service for all industry

DOWELL

DIVISION OF THE DOW CHEMICAL COMPANY

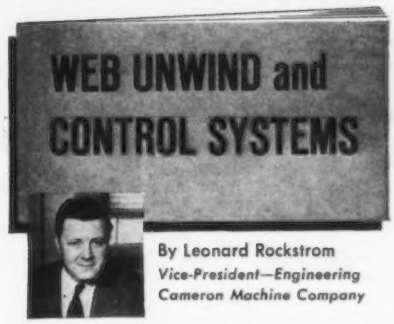
CONTROL THE ROLL

from unwind to rewind

AND YOU CONTROL COST, QUALITY, AND PRODUCTIVITY IN SLITTING, REWINDING AND WEB-FED CONVERTING

Complete automatic roll control, perfectly integrated from unwind to rewind, is rapidly becoming an absolute essential in all areas of slitting, rewinding, web-fed printing and web-fed processing. Today's high-speed, high-volume production systems cannot tolerate the weaknesses inherent in a piecemeal roll handling arrangement.

Get this free book for the facts about...



By Leonard Rockstrom
Vice-President—Engineering
Cameron Machine Company

Competitive standards in all areas of roll production and web-fed converting are demanding increasingly better roll quality plus faster deliveries in greater volume — often with diminishing margins for profit. Profits can dwindle unless you are protected by a properly integrated, dependable system for high speed roll control.

No matter what size rolls you process or produce, or what web materials you work with, you can appreciate the importance of this new book. Here, in easy reference form, is a complete, authoritative, illustrated discussion of the application and use of all modern types of web guide systems, constant tension unwind systems, unwind brakes, unwind stands, and parent roll oscillators.

"Web Unwind and Control Systems" is a comprehensive study of roll control that can help you break through to new, higher levels of profitable operation. Write to Cameron today for your free copy.

There are literally hundreds of possible combinations of of tension sensing systems, unwind brakes, edge guides and other web control devices. The problem is to make them work together for integrated roll control. For example, a good tension sensing system is of little value unless its responses actuate a properly fitted brake of the right design and capacity. Sensing and braking are useless if edge guides fail to respond or if the rewind method employed does not suit the material.

To provide equipment that will work in perfect unison to keep a fast-running web under precision control all the way from unwind to rewind is a job for roll handling specialists-engineers who are thoroughly experienced in every phase of the entire unwind-to-rewind process.

HERE IS ONE *SURE* WAY TO GET INTEGRATED AUTOMATIC ROLL CONTROL

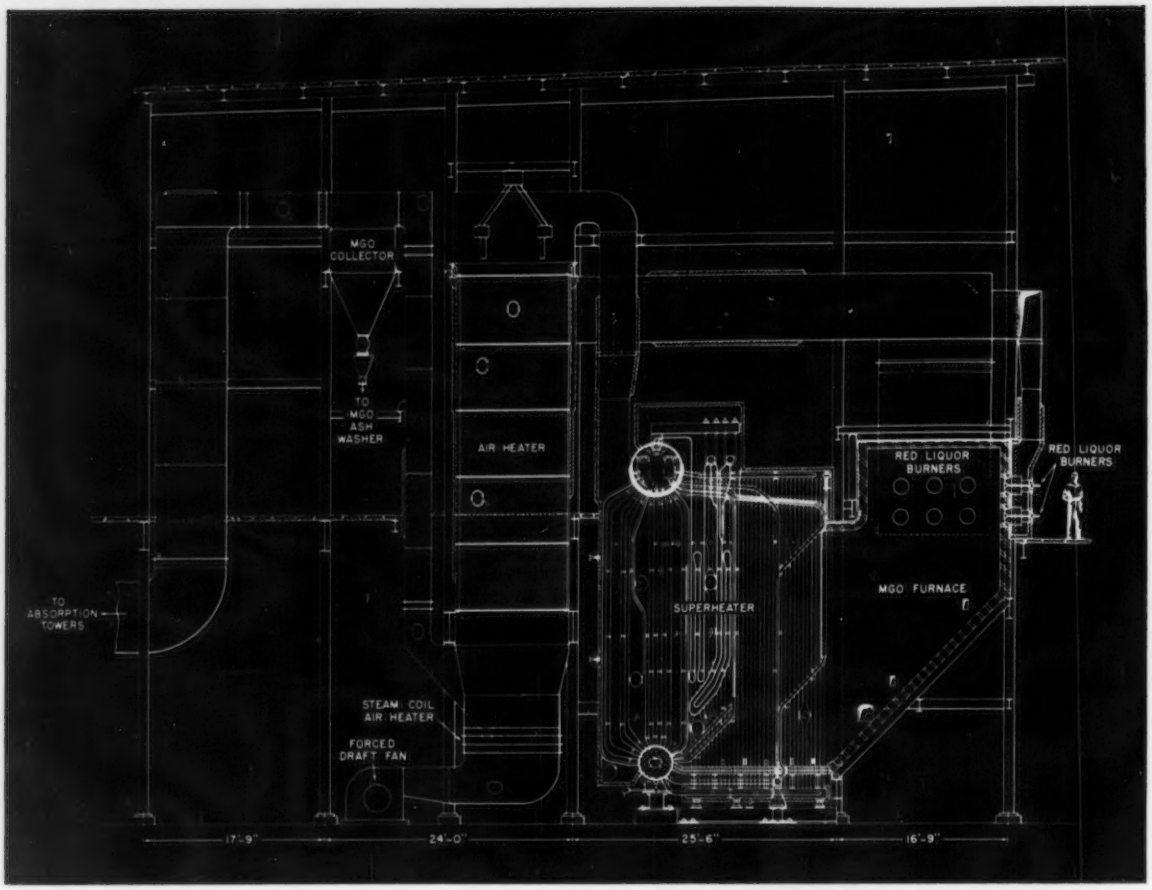
Recognizing the growing need for completely integrated automatic roll control Cameron Specialists have established a unique Testing and Development Department. This department is completely equipped for engineered test runs on all types of flexible web materials. Various unwind, rewind, slitting and control elements are teamed to achieve optimum efficiency. You are invited to consult with Cameron Specialists regarding free test runs on your material. Let Cameron help you *stay ahead!* Write or telephone, now.

Cameron Machine Company, Franklin Road, Dover, N. J.
Canada: Cameron Machine Co. of Canada, Ltd., 15 Hatt St., Dundas, Ontario
France: Batignolles-Chatillon, 5 Rue De Monttessuy, Paris (7e) France

CAMERON
a Team of Specialists

AA 260

53 years devoted exclusively to the design and manufacture of slitting, roll winding, unwind and web control equipment.



B&W MgO Recovery Unit processes 550,000 pounds of red liquor solids per day, generates 115,000 pounds of steam per hour at 850 psi and 825 F at the superheater outlet.

MgO CUTS CHEMICAL COSTS

B&W MgO Pulping and Recovery Process Sets New Standards for Chemical Recovery at Weyerhaeuser Sulfite Pulp Mill

At Weyerhaeuser Timber Company's new sulfite Pulp Mill, Cosmopolis, Washington, the B&W MgO Pulping and Recovery Process has established an impressive record of efficient and economical chemical recovery. *Chemical make-up for the complete process is only 20 pounds of MgO and 50 pounds of sulfur per ton of unbleached pulp produced.*

Low chemical make-up and high steam generation reduce pulping costs. For this reason, the B&W MgO Recovery Process has rightfully earned the acceptance of the Pulp Industry. Start-up of the fifth MgO pulping and recovery installation during 1959 will increase pulp production by this process to 650,000 tons per year.

Talking over your chemical and heat recovery problems with B&W can be your first step toward reducing pulping costs and increasing profits. Why not write today for complete information? The Babcock & Wilcox Company, Boiler Division, Barberton, Ohio.

P-821

B&W

THE BABCOCK & WILCOX COMPANY

BOILER DIVISION

PAPER TRADE JOURNAL

PUBLISHED WEEKLY SINCE 1872

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REMEMBER THESE DATES

Oct. 8-9. Fibre Box Assn., Annual Meeting, Waldorf-Astoria Hotel, New York, N. Y.

October 8-9. Deinking Conference, Roger Smith Hotel, Holyoke, Mass.

October 12-15. TAPPI Engineering Conference, Hotel Penn, Pittsburgh, Pa.

November 4-6. Alkaline Pulping Conference, Hotel Robert Meyer, Jacksonville, Fla.

SUBSCRIPTIONS →

Paper & Pulp Mills, Converters and their Personnel	1 yr.	2 yrs.	3 yrs.
United States and Canada ...	$5.00	$8.00	$10.00

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All Other Countries	20.00	30.00	40.00

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R. E. BOETSCH Director of Circulation

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precision CORE CUTTERS
to meet ALL requirements

up to 18 in. I. D. and lengths to 220 in.

Whether your requirements call for small or large I.D., short or long lengths, automatic, semi-automatic or manual . . . John Dusenbery Co., Inc. can supply every type of core cutter to do your job quickly, efficiently and economically. Ragged edge cores become a thing of the past when you use these modern, up-to-date core cutters. You get smooth, uniform cuts to precise lengths as desired, with complete safety for the operator.

With our exclusive sales representation* for the Textile Paper Products, Inc. line of Core Cutters, you have a strong combination offering these two important things:

1. The advantage of Dusenbery "know-how" on their series of small converter type core cutters.

2. The versatility of the Textile Paper Products line, backed by the extensive research and development on their large Heavy-Duty Automatic Core Cutters and smaller semi-automatic high production cutters.

This enables us to supply every type of core cutter and to give technical advice when needed. Illustrated are three of the many models available.

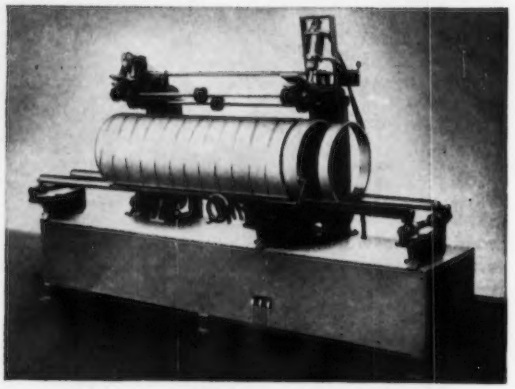
*UNITED STATES AND CANADA

DUSENBERY MODEL 765

Simple operation . . . low cost. Without outboard support cuts can be made to the center of a 90" long core, permitting 1/8" to 45" long cores to be made. For longer cuts, an outboard support bracket can be supplied. No special electrical connections are required; just plug into any 110V light or wall socket.

SPECIFICATIONS

- overall length — 72"
- overall width — 20"
- overall height — 18"
- core I.D. range 3" to 6"
- approx. shipping weight—250 lbs.
- motor specifications: 1/4 hp, 110V, single phase



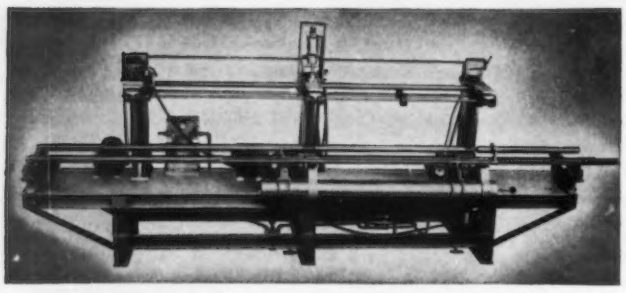
TEXTILE PAPER PRODUCTS MODEL CR-90

This machine handles cores up to 150" in length with recuts from 1/8" to 75"

SPECIFICATIONS

- overall length—108"
- overall width—30"
- overall height—66"
- core I.D. range—3" to 18"
- nec. air press.—60 lbs.
- approx. shipping weight—3000 lbs.
- saw blade—8", carbide tipped, core type

Motor specifications: Main Drive Motor, 2 hp, 3600 RPM; Rider Roll Drive Motor, 1/8 hp, 36 RPM output; Positioning Motor, 1/4 hp reductor, 68 RPM output.



TEXTILE PAPER PRODUCTS MODEL CR-120

The machine that does it all!
Handles cores to 220" with recuts from 1/8" to 110"

SPECIFICATIONS

- overall length—168"
- overall width—30"
- overall height—66"
- nec. air press.—60 lbs.
- core I.D. range—3" to 18"
- approx. shipping weight—4000 lbs.
- saw blade—8", carbide tipped, core type

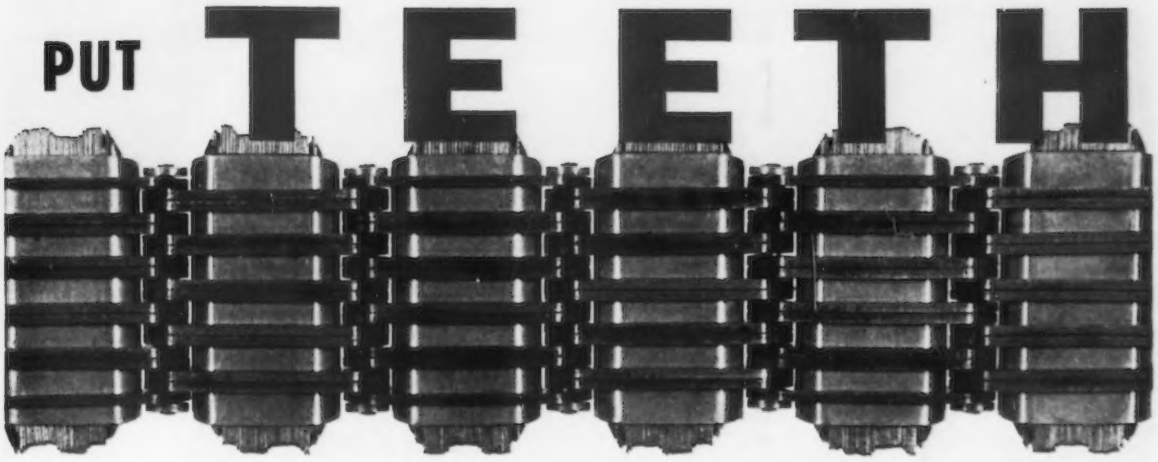
Motor specifications: Main Drive Motor, 3 hp, 3600 RPM; Rider Roll Drive Motor, 1/8 hp, 36 RPM output; Positioning Motor, 1/4 hp reductor, 68 RPM output — All motors 220, 440, 3 phase.

Dusenbery

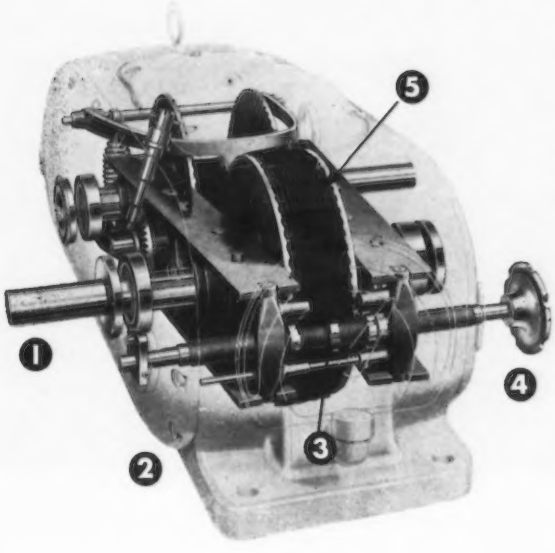
ENGINEERED CONVERTING EQUIPMENT

JOHN DUSENBERY CO., INC. 273 GROVE AVE., VERONA, N. J.

PUT TEETH IN YOUR SPEED CHANGING JOBS



Get the positive, accurate control that only LINK-BELT's chain-driven P.I.V. can deliver



Yes, you put teeth into your speed changing jobs because Link-Belt P.I.V.—unlike other variable speed drives—utilizes an exclusive metal, self-tooth-forming chain.

Here's how it works! P.I.V. chain consists of a series of overlapping steel links. The links contain packs of slats which are free to move from side to side, singly or collectively, to serve as teeth. The chain meshes with radially grooved wheels, which are cut to a constant depth towards the wheel periphery. Beveled sides of the grooves offer gripping areas . . . provide a positive, nonslip contact at any speed, under all loads.

Makes changing speed simple too! A turn of the control screw simultaneously varies the effective diameters of the conically shaped wheels—closing one set, spreading the other. At the same time, the self-tooth-forming chain automatically adjusts to provide desired ratio between the input and output shafts.

BOOK 2274—Your Link-Belt office or authorized stock-carrying distributor has Book 2274 on P.I.V. drives from ½ to 25 hp. Refer to the yellow pages of your local phone directory under Power Transmission Equipment.

(1) You can get minute speed changes and maintain them accurately while operating under full load.

(2) All-metal, totally enclosed—unaffected by atmospheric conditions. All vital operating parts splash-lubricated from a common housing reservoir.

(3) Easy-view speed indicator facilitates speed selection and adjustments to meet all requirements.

(4) An infinite number of positive, stepless speed adjustments may be made with manual, electric, pneumatic or hydraulic controls.

(5) Self-tooth-forming chain is made from a series of overlapping steel links. Links contain packs of hardened steel laminations or slats (shown above). Slats grip toothed wheels positively without slippage—give the speed you need at any setting.

15,249

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To serve Industry There Are Link-Belt Plants, Sales Offices and Stock Carrying Distributors in All Principal Cities. Export Office, New York 7; Australia, Marrickville (Sydney); Brazil, Sao Paulo; Canada, Scarboro (Toronto 13); South Africa, Springs. Representatives Throughout the World.

LINK-BELT P.I.V. VARIABLE SPEED DRIVE

One of the important marketing functions of a waxed paper wrapper is to help the supermarket shopper identify her favorite brand.

TITANOX® helps her find her brand

Such identification is made easier by sharpening the contrast and legibility of the wrapper through white pigmentation. And the best effects are always achieved by the remarkable whitening, brightening and opacifying power of TITANOX white titanium dioxide pigments.

Not only food wrappers, but *all* types of paper products are better pigmented with TITANOX—the favorite brand of most papermakers. Titanium Pigment Corporation, 111 Broadway, New York 6, N. Y.; offices and warehouses in principal cities. In Canada: Canadian Titanium Pigments Ltd., Montreal.

TITANIUM PIGMENT CORPORATION
SUBSIDIARY OF NATIONAL LEAD COMPANY

2168

STANLEY made the strapping tool mobile and cut packaging time up to 75%!

At Strathmore Paper Co., West Springfield, Mass., The Stanley Steel Strapping Specialist suspended a Stanley Electric Skid Magazine Tool from a balancer on an over-head mount.

Now the tool can be speedily positioned for applying Stanley Steel Strapping with maximum ease and efficiency to unit pack sixteen corrugated cartons of paper to a skid.

Strathmore's Manager of Production Planning, William F. Butler, says this tool mobility "cuts packing and loading time 50 to 75%!"

The Stanley Steel Strapping System can be tailored to give YOU greater tool mobility for faster packaging. Write for data sheets to STANLEY STEEL STRAPPING, Division of The Stanley Works, Dept. I, 1307 Corbin Ave., New Britain, Conn.

STANLEY INSURE IT—SECURE IT WITH STANLEY STEEL STRAPPING

STANLEY
REG. U.S. PAT. OFF.

AMERICA BUILDS BETTER AND LIVES BETTER WITH STANLEY

This famous trademark distinguishes over 20,000 quality products of The Stanley Works, New Britain, Conn.—hand tools • electric tools • builders hardware • industrial hardware • drapery hardware • automatic door controls • aluminum windows • stampings • springs • coatings • strip steel • steel strapping—made in 24 plants in the United States, Canada, England and Germany.

In Canada: Steel Strapping Division, The Stanley Works of Canada, Ltd., Hamilton, Ontario

SITE STUDIES IN THE SEABOARD SOUTHEAST

Along the thousands of miles comprising the Seaboard Air Line Railroad system, there are many remaining sites which adequately meet the requirements for pulp and paper manufacture.

It is in this area that the industry has registered such spectacular growth in the past two decades. Timber in the region is in plentiful supply, and numerous streams furnish an abundance of water for processing.

Let us submit details on some of the excellent locations for pulp and paper mills in the Seaboard Southeast.

Address: **Warren T. White**
Assistant Vice President
Seaboard Air Line Railroad Company
3600 West Broad Street
Richmond, Virginia

Caustic usage growing? Count on Pennsalt

As your caustic soda requirements expand, you can depend on prompt, economical delivery from Pennsalt. Supplying the pulp and paper industry with quality chemicals is a Pennsalt specialty. You'll get time-saving shipment by barge, tank car, or tank truck from one of four conveniently located Pennsalt caustic bulk centers at Chicago, Pittsburgh, Calvert City, Ky., and Wyandotte, Mich. . . . plus technical aid on handling and storing. Count on Pennsalt for other quality chemicals too . . . including chlorine, hydrogen peroxide, ammonia and Nonic® surfactants. Your nearby Pennsalt Branch Office will be glad to give you full information.

See our Catalog in Chemical Materials Catalog

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ESTABLISHED 1850

In the West, Pennsalt of Washington Division sells caustic soda, chlorine, ammonia and sodium chlorate from plants at Tacoma, Washington and Portland, Oregon.

Nationwide Network of Local Service Centers!

Wherever they are, users of Towmotor-Gerlinger fork lift trucks and carriers know that the industry's fastest service is as handy as a phone call. It's one of the reasons why industrial firms have invested millions of dollars in Towmotor-Gerlinger equipment.

Over 90% of parts are replaced off the shelf at local service centers —others within 24 hours! Prompt repairs are made by service experts. Even engine overhauls are treated like emergencies to maintain Towmotor's reputation for *Continuous Operation.* This is aided also by Towmotor Preventive Maintenance Service *which actually averts downtime, prevents wear, cuts repair bills and keeps equipment on the job around the calendar!*

Want more information on this unique Towmotor service? Ask for *Towmotor P-M Service Booklet SP-18.* Write Towmotor Corporation, Cleveland 10, Ohio.

Find Your Nearest Distributor In The 'Yellow Pages'

TOWMOTOR THE ONE-MAN-GANG® **-GERLINGER**

LEADER FOR 40 YEARS IN BUILDING FORK LIFT TRUCKS, CARRIERS AND TRACTORS

**Gerlinger Carrier Co. is a subsidiary of Towmotor Corporation*

Uses halftones for printing, Cities Service Wax for coating

Tired of being restricted to line art on corrugated? So was Hercules Box Company—and despite the skeptics, Hercules did something about it.

Today, thanks to a special plastic die developed by Hercules it is possible to print halftone photographs on corrugated!

Creative thinking such as this dominates all that is planned or purchased at Hercules . . . and is clearly reflected in their choice of Cities Service Pacemaker Wax.

Cities Service won the wax role at Hercules because in its own way it is as far ahead of competition as Hercules itself.

Locally warehoused, and delivered in palletized packages from 54 pounds to one ton, Cities Service Pacemaker Wax enables lower wax inventory, frees valuable storage space.

Moreover, the quality of Pacemaker Wax cannot be surpassed. Made in the world's most modern wax refinery and subjected to the most exhaustive testing in the industry, Pacemaker gives maximum resistance to blocking and moisture transmission, has excellent tensile strength, hardness, gloss, and gloss retention.

If you're looking for that rare combination of superb quality and swift service, talk with a Cities Service Wax Representative. Call the nearest office or write: Cities Service Oil Company, Sixty Wall Tower, New York 5, New York.

CITIES SERVICE

QUALITY PETROLEUM PRODUCTS

Typical Example of the results Hercules achieves with its halftone printing process is this corrugated box for dishware. Hercules also pioneered use of fast drying water based inks.

A More Efficient Waxing Operation is achieved with Cities Service Pacemaker. The wax prevents blocking, gives hard gloss and maximum resistance to moisture transmission. Locally warehoused, it enables quick delivery and less storage for customers.

A SKILLED HAND IN CHEMISTRY . . . AT WORK FOR YOU

NOPCOSANT®

...for pitch dispersing

...for slime control

...for size stabilizing

...for coating fluidizing

...for uniform dyeing

You will find it worth your while to get all the facts about Nopcosant—Nopco's newly improved dispersant and solubilizer. Ask your Nopco representative or write for complete information. Remember, too, back of every chemical made by Nopco for the paper industry stands Nopco Technical Service—an experienced staff ready to assist with laboratory data and recommendations based upon your specific requirements.

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A fine powder of uniform particle size

★

Dusts less than any other similar product

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Lightest colored product of its type

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One of the most rapidly dissolving products available

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Most nearly natural *p*H in its chemical class

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Teamed to make Paper Progress Possible

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Two MURCO 96" 10-knife Chippers;
One MURCO Heavy Duty Wood Splitter.

RHINELANDER PAPER COMPANY,
Division of St. Regis Paper Company, Rhinelander, Wisconsin
Two MURCO 88" 10-knife Chipper.

MURCO

Heavy Duty Equipment!

WAUSAU PAPER MILLS CO., Brokaw, Wisconsin
One MURCO 11' Inside Diameter x 28' long plate type single section Barking Drum Trunnion mounted (1923);
One MURCO 88" 10-knife left hand Chipper (1938);
Eight MURCO Roll Double Calander Stack open side (1952);
One MURCO Roll Lowering Table to handle rolls 60" Diameter x 100" long (1954);
One MURCO Pulpwood Slasher.

MOSINEE PAPER MILLS CO., Mosinee, Wisconsin
One MURCO 90" 10-knife Chipper;
One MURCO 40" 6-knife Rechipper;
Two MURCO Pulpwood Slashers;
Two MURCO 5'-0" Chip Feeders;
Two MURCO Roll Lowering Tables.

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D. J. MURRAY
MANUFACTURING CO.
WAUSAU • WISCONSIN

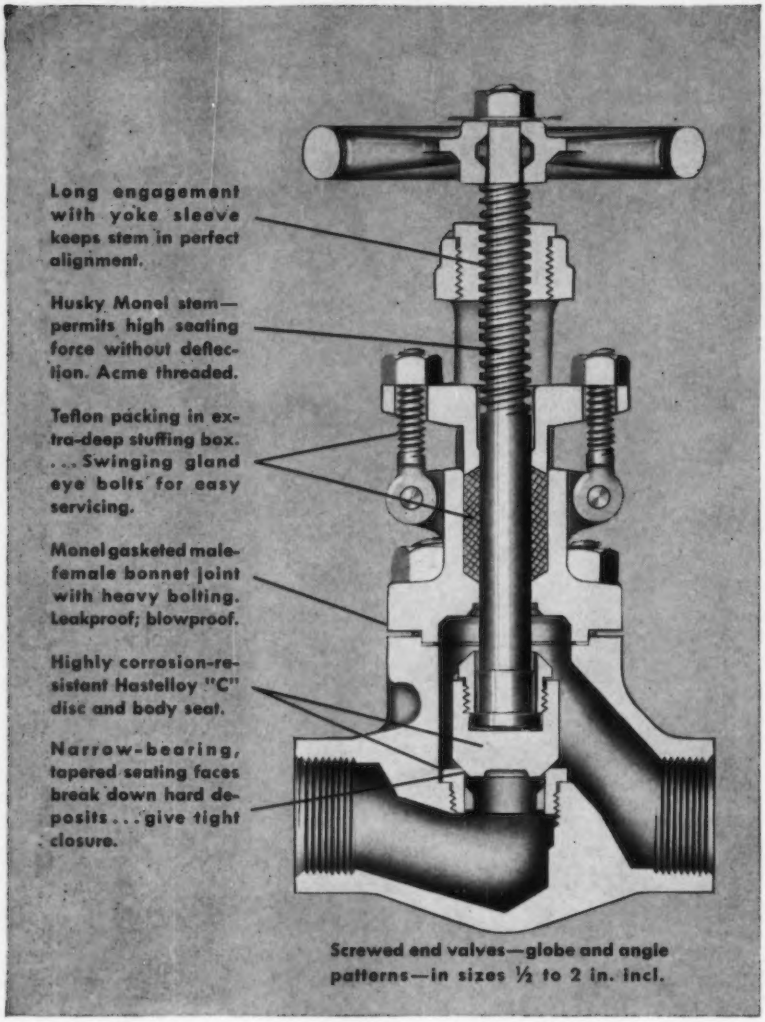
OIC leads the industry in the completeness of its bronze gate valve line. Fig. 7200: 200-lb. gate shown here features the famous OIC Alloy 40 stem that outlasts conventional valve stems 10 to 20 times. Available in sizes from ⅜" to 3", at leading distributors in every trading area.

CREATIVE ability has never been limited to the arts. At OIC we're using a creative approach in all phases of service to our customers and distributors . . . and many of them tell us this creative approach is a thing they've been waiting for, for years. It means a new approach to field engineering with an eye to helping you cut costs without compromise on quality. It means new savings in materials handling costs through planned palletized shipments and improved packaging methods. It means an aggressive, new approach to product development. It means the use of the latest *integrated data-processing* methods to assure you of getting the valves you need, when you need them. When can we give you all the facts about the new OIC creative approach, and the many advantages it offers you?

OIC VALVES
THE OHIO INJECTOR COMPANY

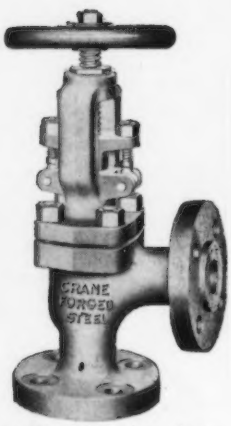
FORGED AND CAST STEEL, BRONZE, IRON AND DUCTILE IRON VALVES

• WADSWORTH, OHIO


Long engagement with yoke sleeve keeps stem in perfect alignment.
Husky Monel stem—permits high seating force without deflection. Acme threaded.
Teflon packing in extra-deep stuffing box. . . . Swinging gland eye bolts for easy servicing.
Monel gasketed male-female bonnet joint with heavy bolting. Leakproof; blowproof.
Highly corrosion-resistant Hastelloy "C" disc and body seat.
Narrow-bearing, tapered seating faces break down hard deposits . . . give tight closure.

Screwed end valves—globe and angle patterns—in sizes ½ to 2 in. incl.

Flanged end globe valve—in sizes ½ to 6 in. incl.



Flanged end angle valve—in sizes ½ to 2 in. incl.

NEW! Crane chlorine valves now in sizes up to 6 in.

Performance-proved over many years in sizes up to 2 in., these *engineered-for-chlorine* valves are now available in larger sizes with flanged ends—2½, 3, 4 and 6 in.

Many features put these valves head and shoulders above any other for gas or liquid chlorine handling. There's extra strength where needed in the steel body and integral bonnet and yoke. The bonnet joint is gasketed with Monel and heavily bolted; it's leakproof and blowproof. A deep stuffing box with Teflon V-ring packing insures long-life stem seal.

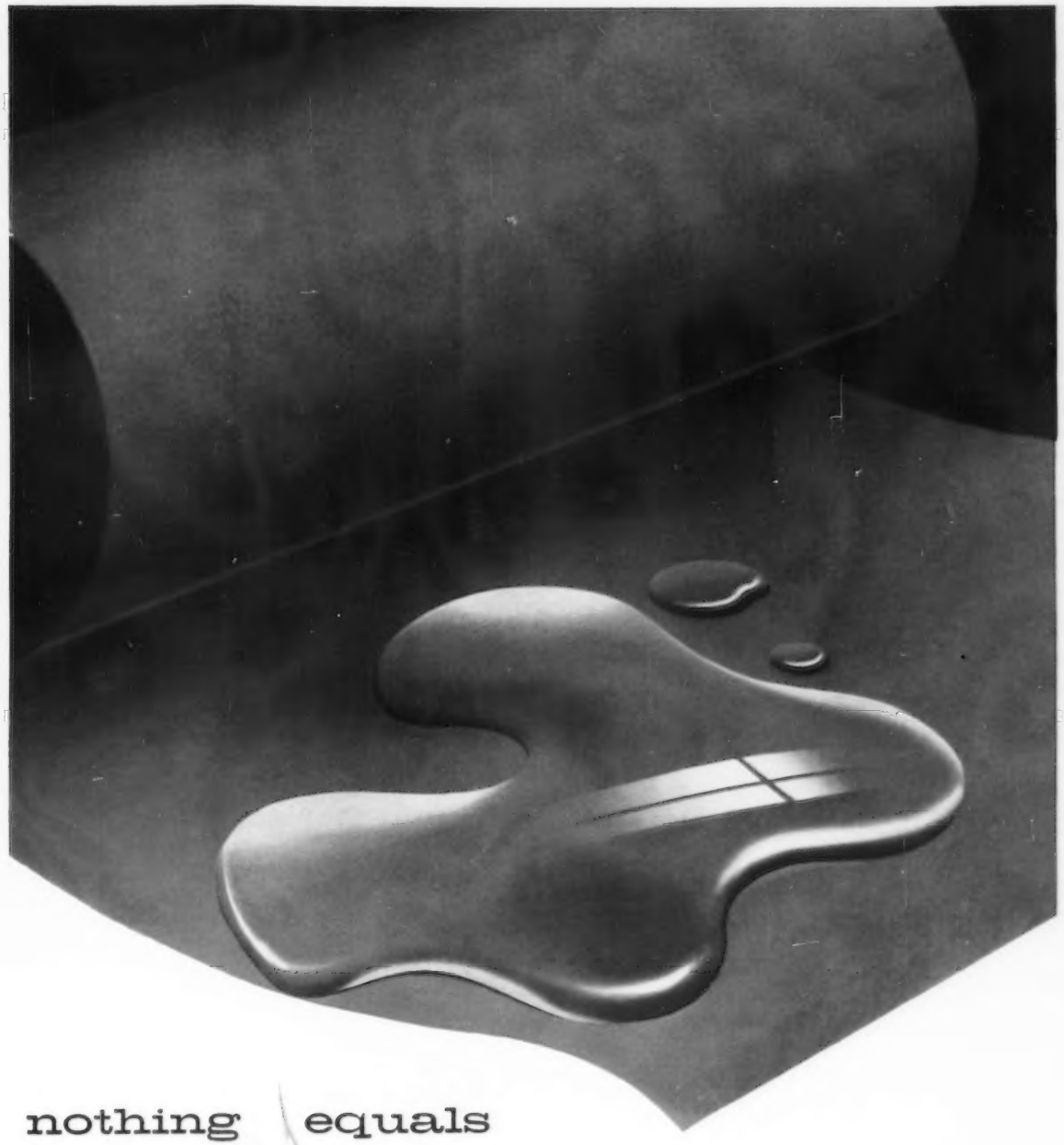
Disc and body seat ring are Hastelloy "C" for tight seating with high corrosion resistance. Narrow-bearing, 45-degree taper seating design and the husky Monel stem easily break down any hard deposits on seat faces.

Choose these valves for all water-free chlorine gas or liquid services up to 300 F. They're ideal for chlorinating lines in chemical processing and bleaching, treatment of water and sewage, etc. Get complete specifications from your Crane Representative or write to address below.

CRANE® VALVES & FITTINGS

PIPE • PLUMBING • HEATING • AIR CONDITIONING

Since 1855—Crane Co., General Offices: Chicago 5, Illinois—Branches and Wholesalers Serving All Areas



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Pale in color and chemically unique, **Piccopale,** a polymerized petroleum resin, is versatile in its many uses. **Piccopale Resin** is inert and heat stable, and its hydrocarbon structure assures the utmost in water and moisture resistance.

PENNSYLVANIA INDUSTRIAL CHEMICAL CORPORATION
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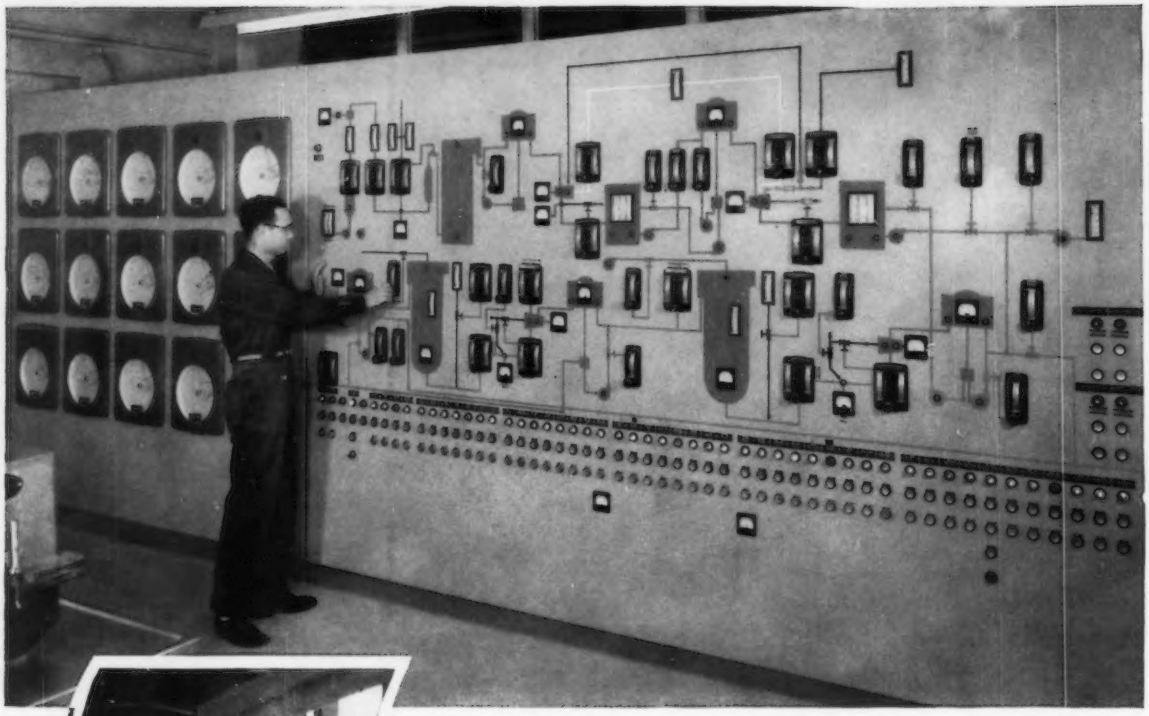

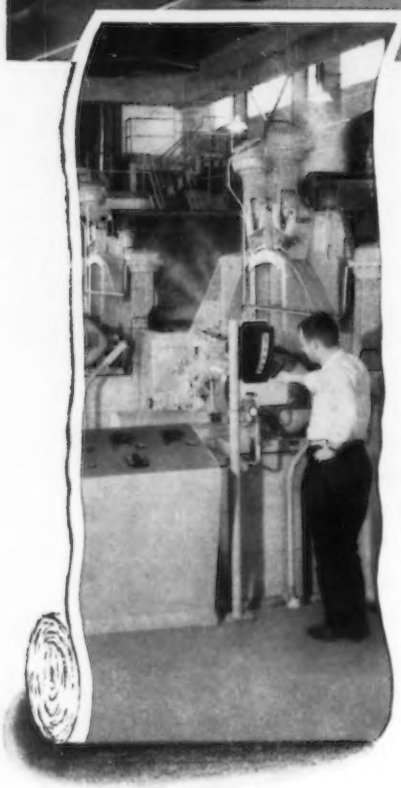

Photos courtesy Marathon Southern Corporation

Bailey controls Marathon's five-stage bleach plant!

Marathon Southern's five-stage bleach plant at Naheola, Ala., is one of the most completely instrumented in southern U.S.A.

Rigid quality control—automatic and foolproof—keeps production going at top speed with unvarying excellence in the finished product.

The panel board in the central control room (above) was built and instrumented by Bailey. Note how it is divided into two sections. The 15 Bailey Recorders in the recorder section provide continuous circular chart records. The functional graphic panel on its right provides a complete visual picture of the entire process. Important control variables such as stock consistency, stock flow, bleach liquor flows, stock temperatures, etc., can be watched and instantly corrected, either automatically or manually.

At the same station, the operator can supply consistency-controlled stock (from any of four storage towers) to any of the semi-bleach, pine bleach, or gum bleach pulp chests on a ratioed flow, automatically controlled basis.

Each of the five vat bleach washers is equipped with automatic level control (as shown at left).

This is but one example of how Bailey is helping pulp and paper processors to greater degrees of automation, efficiency, and quality control. Let your Bailey Engineer suggest applications to fit your operation. Or write for specific control systems information for your entire plant operation.

P149-1

PULP AND PAPER DIVISION

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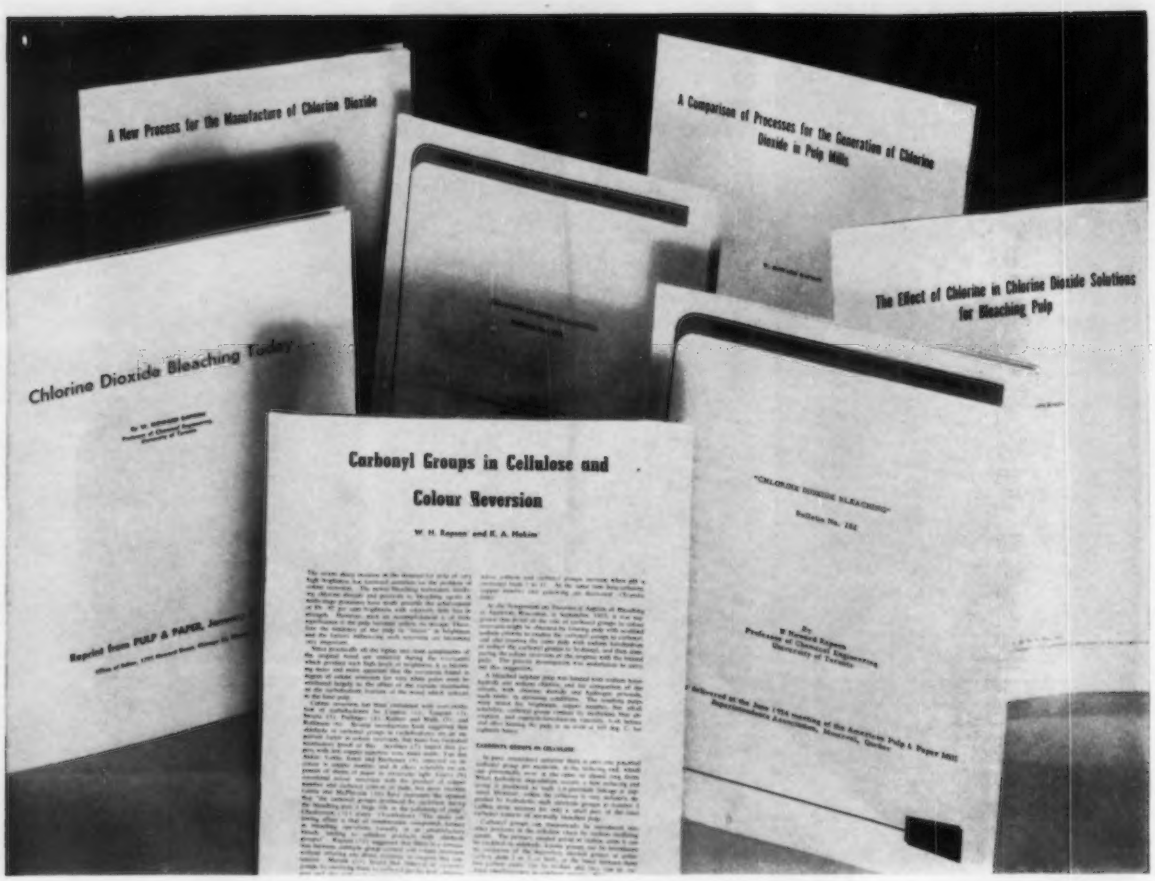
Whether you are contemplating major modernization or the profitable addition of a single machine, the man to call is your A-C representative. His recommendations are backed by the many Allis-Chalmers engineering departments, by complete research and testing facilities, by experience gained in a close working relationship with the pulp and paper industry. *For complete information, contact your nearby A-C sales office or write Allis-Chalmers, Milwaukee 1, Wisconsin.*

ALLIS-CHALMERS A-C A-5975-PP


A New Process for the Manufacture of Chlorine Dioxide
A Comparison of Processes for the Generation of Chlorine Dioxide in Pulp Mills
The Effect of Chlorine in Chlorine Dioxide Solutions for Bleaching Pulp
Chlorine Dioxide Bleaching Today
Carbonyl Groups in Cellulose and Colour Reversion

CHLORINE DIOXIDE ROUNDUP

Above you see a collection of the more significant papers and bulletins published on chlorine dioxide.

At right you see a coupon which you are invited to use to send for those pieces you find most interesting.

This roundup is typical of the information collected by the Hooker Technical Service Department on chemicals used in the pulp and paper industry.

Gathering and disseminating such information is an integral part of our service to you who use such Hooker chemicals as sodium chlorate, chlorine, and caustic soda.

CHECK ITEMS YOU WANT:

- ☐ Bul. 222 Materials of Construction for ClO_2 Manufacture and Bleaching
- ☐ Bul. 221 A new process for the Manufacture of ClO_2
- ☐ Bul. 220 Chlorine Dioxide Bleaching Today
- ☐ Bul. 219 Carbonyl Groups in Cellulose and Color Reversion
- ☐ Bul. 218 Effect of Chlorine on Chlorine Dioxide Solutions for Bleaching Pulp
- ☐ Bul. 205 Comparison of Processes for the Generation of ClO_2 in Pulp Mills
- ☐ Bul. **203** Chlorine Dioxide Bleaching

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in a tornado of abrasive dust!

FROZEN
for weeks at 75° C below zero!

BURIED ALIVE
in thick, sluggish mud!

nothing . . . but nothing stops Super-Seal open-type motors

Thanks to exclusive Poxeal and Silco-Flex insulations, Super-Seal motors have shown endurances that even enclosed motors couldn't match. Results and reasons available from your A-C representative or distributor. Or write General Products Division, Milwaukee 1, Wisconsin

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PULP

Perkins-Goodwin Co.

Established 1846

PULP AND PAPER MARKETING-MANAGEMENT

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PAPER

Cross-section of one stage showing arrangement of bowl, wearing ring, impeller, shaft and bearings.
Allis-Chalmers introduces...
New vertical turbine pump – the prime pump that needs no priming
Plan to stay ahead... MODERNIZE!

Now Allis-Chalmers brings its 85 years of pump experience to the short-coupled vertical turbine-type field. This addition not only rounds out industry's most complete single source for pump installations, it offers many advantages wherever liquids are to be pumped. Standard sizes for heads up to 400 ft or more, and capacities ranging from 20 to 8000 gpm.

Pressures can be increased by simply adding a stage to the existing pump without increasing space requirements. Equipment and installation costs are low. Motor and discharge nozzle are supported by a single, small foundation. There's no need for suction pipe, interlock controls or priming equipment. Allis-Chalmers hollow-shaft motors remove the danger of open couplings.

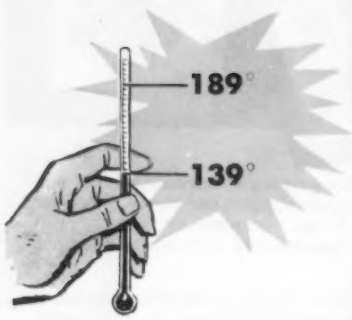
Many advantages — Self-priming • eliminate suction piping costs • save space, motor support and discharge nozzle are integral • low first cost • increase pressure easily • operate quietly • low maintenance with one stuffing box • no motor flooding.

Many applications — Water systems, irrigation, condenser systems, bilge and sump service, dry docks, fire equipment, filter washing, recirculation, transfer pumping, process pumping, cooling condensers and diesel engine jackets, air conditioning, caisson and mine dewatering, general-purpose pumping.

Allis-Chalmers pump experts will be happy to tell you about this new addition to an outstanding line. Contact your A-C representative or distributor, or write Allis-Chalmers, General Products Division, Milwaukee 1, Wis.

ALLIS-CHALMERS

A-1163-PP



At Gould Paper Company
Bearing Temperatures Reduced 50° F*

Automatic, centralized Micro-Fog Lubrication was installed early in 1957 by Gould Paper Co., Lyons Falls, N. Y., on the dryer section of this paper machine. It has lowered the average operating temperature of all 86 half bearings (9½" dia. x 12") from 189° F to 139° F. Two other similar machines were also converted by this company to Micro-Fog — a total of 368 bearings of all types.

The magic of Norgren Micro-Fog *provides these additional benefits at Gould:*

1. Elimination of frequent bearing failures.
2. Elimination of the cost of hand oiling and block grease replacement.
3. Elimination of fire hazard from dripping lubricant.
4. No product contamination.
5. 66% reduction of lubricant consumption.
6. Perfect lubrication for all bearings.

If it's Norgren...It's Dependable.

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Trends

Paper Earnings Won't Match 1956

Although paper and board production this year will probably be 8% above the record set in 1956, the Value Line Investment survey predicts that earnings this year are likely to fall short of those made in 1956.

Surveys Don't Show the Real Picture

A number of recent surveys of capital spending by industries fail to show the present pulp and paper picture accurately. First because during the several months that these surveys were in process there was a drastic swing upward in capital appropriations, particullarly for major projects. These surveys only show the expenditures for the year 1959 and in our industry the lapse between the appropriation and expenditure of funds for capital projects runs from six to eighteen months.

Comparing Production for 50 Different Grades

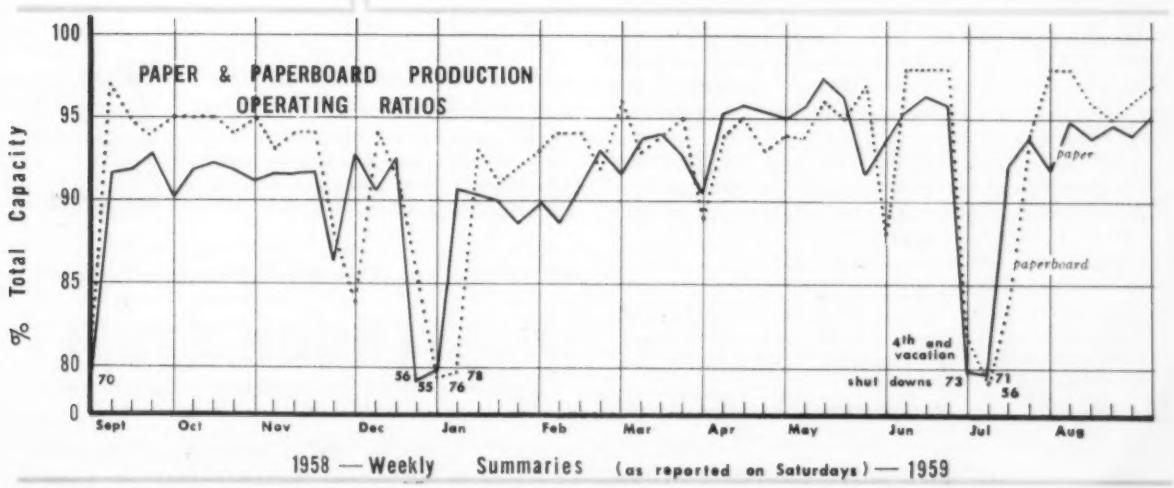
An article beginning on page 46 gives U.S. monthly production for more than 50 grades of paper and board for the first half of this year and shows a comparison of their output for the first six months of this year with the same period last year. The data is too detailed to summarize here.

Forecast Sales Record for Cigarettes

Forecasts of record cigarette sales for this year is good news to the manufacturers of cigarette paper of which there are only two, Ecusta Division of Olin Mathieson and the Peter J. Schweitzer Division of Kimberly-Clark. To the best of our knowledge this is the only grade of paper made in this country for which there are only two producers.

Corr Boxes Ahead by 16%

Corrugated box production for January through August of this year was approximately 16% above the same period for 1958.



"We found the big difference in PVC

. . . and an important one, too," reports one of the nation's leading industrial companies. A PVC pipe that included synthetic rubber to give it high-impact strength was being used in process lines handling acid. Suddenly it was discovered that the acid was eating away the rubber—leaving black particles in the solution.

So out came the old pipe, replaced by Ryertex®-Omicron PVC—the pipe that's unplasticized, unmodified, and has no additives. There is *nothing* in the material to contaminate the acid. And it has *natural*, high-impact strength.

This company now has ¾" through 1½" Ryertex-Omicron PVC pipe, with companion fittings and valves, operating at continuous temperatures of 125° F. at maximum pressures of 40 p.s.i.

After 18 months of problem-free service, the engineering director has standardized on Ryertex-Omicron PVC. Whether your problem is contamination or corrosion, it will pay you to learn all the facts on Ryertex-Omicron PVC.

GET THIS NEW BOOKLET

. . . for latest information on combating tough corrosion problems with Ryertex-Omicron PVC. Write Joseph T. Ryerson & Son., Inc. for your free copy today. We will gladly work with you on any problems you may encounter.

Typical applications

Pulp lines, chlorine lines, chlorine gas distributors, white-water tanks, sizing tanks, head boxes, throughs, blowers, flow boxes and baffles, beater linings, fan housings, bars and girths, trays and pulp-measuring devices.

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PJT PAPER TRADE JOURNAL

WEEK OF SEPTEMBER 21, 1959

K-C and Stevens Form New Company

A new corporation has been formed by Kimberly Clark Corp. and J. P. Stevens & Co., Inc. The two companies have formed a jointly owned and separately operated subsidiary, the Kimberly-Stevens Corp., to produce and market non-woven fabric materials.

Joseph H. Sutherland, recently retired J. P. Stevens & Co., Inc., vice chairman, will be president of the new company. The executive and sales offices will be in the Stevens Building, 1460 Broadway, New York City.

Particular emphasis will be placed upon extensive research and development in an effort to create new nonwoven products for new fields not now extensively serviced by either the paper or the textile industry. Examples of this might be found in filtration materials—disposable clothing, medical products, household goods and inner construction fabrics for many articles of apparel.

The new company will also make immediate provisions to supply existing users of nonwoven materials with a number of nonwoven products utilizing a variety of textile and papermaking processes.

Bend Mill Construction Not Near

Directors of the Powell River Co. Ltd., of British Columbia and Brooks-Scanlon Inc., Minneapolis, hope to start construction of a pulp or paper mill in the Bend area of Oregon within the next 15 months.

Possibility that the plant can be started before the end of 1959 has been ruled out. Cost is expected to be about $30,000,000.

This announcement was made in a joint statement of directors of the two firms which own the big Brooks-Scanlon Inc. sawmill on the Deschutes River at Bend.

"Due to the many problems which must be worked out in the proposed amalgamation of the Powell River Co. and MacMillan and Bloedel, no new mill in the Bend area can be started before the end of 1959.

"Preliminary engineering is under way for designing of barking and chipping facilities at Bend sawmill.

This is the first step toward any proposed pulp mill. Brooks-Scanlon Inc. directors have authorized the initiating, within the Powell River organization, of such engineering and further planning as is necessary to determine the up-to-date cost, proper location and solution to water supply and wood and pulp supply connected for the proposed plant. This plant has been under consideration for some time.

Bowater Expands on Continent

Bowater Paper Corp. of London, England, has enlarged its operation in the Continental Europe with the acquisition of three companies.

Bowater Cello S.A. will carry on the business of Cello S.A., folding carton manufacturers in Ghent, Belgium.

Bowater Prot S.A. will continue the business of Etablissement Prot Freres S.A., manufacturers of folding cartons, paper bags and other forms of flexible packaging in the city of Rheims in France.

The third acquisition is of Perrone S.p.A., manufacturers of corrugated boxes at Genoa, Italy, which will be known as Bowater Perrone.

All three companies, which operate plant producing packaging materials, become subsidiaries of The Bowater Paper Corporation Limited.

French Firm Seeks American Investment

Papeteries de la Chapelle, French paper producing company established in 1928 for the manufacture of newsprint, is seeking U.S. cooperation in the form of capital and managerial know-how, for an expanded production program. The firm proposes formation of a new company in cooperation with a U.S. investor to include the manufacture of higher grades of paper.

The plant site, located near Rouen, is on a barge canal. Additional capital investment will enable the firm to purchase pulp mill equipment, etc.

A new Beloit machine produces approximately 85,000 tons of newsprint.

It is estimated that paper production for 1961-1971 will increase 40 per cent and between 1971-1981 a further 40 per cent. A staff force of 1,150 is maintained by the firm.

Additional details of the investment proposal, including a report of the history of the company and prospects of the paper industry, are available on loan from the Trade Development Division, Bureau of Foreign Commerce, U.S. Department of Commerce, Washington 25, D.C.

Firms also are invited to correspond with Papeteries de la Chapelle, 104, Avenue des Champs-Elysees, Paris (8), France, or at the factory address, Saint Etienne du Rouvray, Seine Maritime.

Mill Rumored for Newport, Ark.

Officials of the Newport, Ark., Chamber of Commerce reported early in September that an unidentified paper manufacturing company was considering locating a $10,000,000 paper mill on the White River near Newport. Chamber officials said engineers for the company had visited Newport, but would not say what company they represented.

The engineer reported the company was seriously interested in Newport. The firm makes coated paper used mainly by magazines.

Construction Starts on New Kraft Mill in Mississippi

Groundbreaking ceremonies were held recently for a kraft pulp mill, designed to produce one hundred tons per day, which is being built near Lumberton, Miss. Located south of the town in the 30 acre Lumberton Chamber of Commerce Industrial Park, it will be known as the Lumberton Pulp Co.

Lamar Murray, Bogalusa lumberman, president of the new firm announced that excavation has begun and a railway spur track is being laid to connect with the nearby Southern Railway. Mr. Murray said that construction will begin immediately and hopes for completion within twelve months. About one hundred people will be employed in the mill and approximately an equal number will be required in the woods. The groundbreaking ceremonies were conducted by the Lumberton Chamber of Commerce.

The president of the new company has been associated with the pulp and paper industry for 30 years. He was first employed at Gaylord Container Corp. in Bogalusa, La. He also worked with the following companies: Southern Advance Bag & Paper Co., Hodge, La., North Carolina Pulp Co., Plymouth, N. C. and Florida Pulp & Paper Co. (now St. Regis) at Pensacola, Fla.

Lumberton is located in southeastern Mississippi approximately one-half way between Hattiesburg, Miss., and Bogalusa, La.

Canadian Mill Men To Visit USSR

A group-exchange visit has been arranged between the pulp and paper industries of Canada and the U.S.S.R., sponsored by Pulp and Paper Magazine of Canada with the official backing and co-operation of the Canadian Pulp and Paper Association.

A representative Canadian group will visit the Soviet Union during the last three weeks of October. The itinerary will include a number of pulp and paper mills, and it is anticipated that several of the cellulose research institutes and the planning center of the Soviet pulp and paper industry will also be visited.

A return visit of a similar nature from a like number of executives of the Soviet pulp and paper industry will be made to the Canadian industry sometime during 1960.

As presently planned the group from the Canadian industry will industry will include: Peter Harakas, chief engineer, The Ontario Paper Co., Ltd.; G. D. Hughson, director, Gatineau Division, Industrial Cellulose Research Ltd.; Douglas Jones, executive secretary, Technical Section, C.P.P.A.; Dr. John L. Keays, supt. of research & development, Powell River Co. Ltd.; J. McK. Limerick, research director, Bathurst Power & Paper Co. Ltd. and 1959 Chairman, Technical Section C.P.P.A.; E. W. McBride, vice-president, Abitibi Power & Paper Co. Ltd.; F. A. Price, technical editor, Pulp & Paper Magazine of Canada; H. S. Spencer, mill manager, Howard Smith Paper Mills Ltd., and S. E. Williams, vice-president, St. Lawrence Corp. Ltd.

Help Finance Mogi Guacu S.A. Mill

International Finance Corp. (IFC), has announced that it, with participations by the Deltec Corporation of New York, the Chemical International Finance, Ltd., and the Bankers International Corporation, has agreed to invest $4 million in Champion Celulose S.A., a Brazilian corporation, to help finance the construction and operation of a bleached kraft pulp mill in Brazil. Of the $4 million invested, $1,050,000 will come from IFC, $2 million from Deltec, $750,000 from Chemical, an affiliate of the Chemical Corn Exchange Bank of New York, and $200,000 from Bankers, an afficiate of the Bankers Trust Company of New York. Champion Paper and Fibre Co. of Hamilton, Ohio, controls Champion Celulose and will furnish the management.

The Champion Celulose plant, located at Mogi Guacu in the State of Sao Paulo, is now under construction and is expected to start operations late this year. The rated production capacity of the plant is 145 short tons of pulp per day. Forest plantations are being acquired and developed to support this production. Pulpwood for the plant will be primarily eucalyptus and the pulp produced will be sold to Brazilian paper manufacturers for use primarily in the production of white papers such as printing and writing grades.

Paper and Board Production

According to the American Paper and Pulp Ass'n. the ratio of the United States production to mill capacity for the week ending Sept. 5, 1959, was 95.2 per cent compared with 95.5 per cent revised for the preceding week. The ratio was 69.4 per cent for the corresponding week a year ago.

The paperboard production ratio for the week ending Sept. 5, 1959, was 97 per cent compared with 96 per cent for the preceding week and 73 per cent for the corresponding week a year ago.

(Detailed statistics on page 58)

Diamond Gardner-U.S. Printing Merger Approved

Shareowners of Diamond Gardner Corporation and The United States Printing & Lithograph Company approved a plan to merge the two companies at special meetings on September 14. Shareowners also approved Diamond National Corporation as the new name of the expanded company. The Gardner Board and Carton Co., Middletown, Ohio, merged with The Diamond Match Company in 1957 and the company became Diamond Gardner Corporation. Now, following the merger with U. S. Printing, the name is being changed to Diamond National Corporation.

Diamond owns a 50 per cent equity in Dairypak Butler, Inc., producers of milk cartons, formed by Gardner and Champion Paper and Fibre Co.

PJT PAPER PEOPLE

D. D. Uong

S. Kukolich

Fitchburg Paper Names Uong Senior V-P

D. D. Uong, a director of the Fitchburg Paper Co., has been named senior vice president and director of new product development for the company.

The appointment of Dr. Stephen Kukolich as director of research for the paper-manufacturing concern was also announced.

Mr. Uong, a graduate of the University of Maine, joined the local concern in 1926 as a chemist. His duties since that time have included the positions of chief chemist, works manager and vice president in charge of research and engineering.

To Head Oxford Book Sales

Charles E. Gordon has been appointed manager of Book Publishing Sales, it was announced by Andrew M. McBurney, vice president, sales, Oxford Paper Co.

Mr. Gordon joined Oxford Paper Co. in 1923 as a trainee. After completing his training, he was assigned to the sales department in Chicago. In 1942 he left Oxford temporarily to serve in the Army. In 1946, after completing his military service, Mr. Gordon joined Doubleday & Co. as a member of the purchasing department. In 1953 he rejoined Oxford Paper Co. as a member of the New York sales force.

Western N.E. Paper Mfrs. Adviser Plans Retirement

Harold T. Martin of Holyoke, Mass., industrial relations adviser to a group of western New England paper manufacturers, is planning to retire from this position around January 1, 1960. The announcement was made by Mr. Martin and Henry V. Burgee of Parsons Paper Division, National Vulcanized Fibre Co., chairman of the manufacturers group.

Mr. Martin has held this position for the past 20 years. He is a member of the Industrial Relations Committee of the American Paper and Pulp Ass'n. and the Industrial Relations Ass'n. of Western Massachusetts.

In 1939 Mr. Martin came to Holyoke from Boston to take charge of labor relations for the paper manufacturing group, resigning as New England regional representative of the Employment Security division of the Federal Social Security Board. No successor has yet been chosen to fill Mr. Martin's position.

Glatfelter Announces Reorganization Program

Spring Grove, Pa

The P. H. Glatfelter Co. has announced the following changes in its reorganization program of the research and quality control departments.

Millard M. Muntz has been appointed quality control manager. He will be responsible for the overall activities of the quality control department. Mr. Muntz is a graduate of Gettysburg College and started with the Glatfelter Co. in 1952 with the pulp development group.

Olin V. Hyde was promoted to chief of quality control engineering section. He will be responsible for the engineering and statistical aspects pertaining to the quality control functions.

Kenneth S. Whisler has been made chief of the inspection and testing section. In this position he will be responsible for all inspection and testing in the mill, including both pulp and paper divisions.

Cleo A. Bortner will take over the duties as inspection foreman of the pulp mill, and Robert Moul will assume similar duties for the paper mill section.

L. Henry Smaine will be transferred from research to the technical service department and take over the position of paper group leader. He started with Glatfelter in 1952 as a paper chemist and was later appointed supervisor of paper research in 1957.

Donald A. Yateman, who was employed by the company as a paper chemist in 1959, has been promoted to supervisor of paper research.

Mosinee Paper Mills Increases Sales Force

Mosinee Paper Mills Co. has increased its sales force with the addition of Charles C. Spencer. He will work out of the Mosinee, Wis. firm's Pittsburgh sales office covering the Sharon, Harrisburg, Pittsburgh, and Cleveland areas.

Mr. Spencer has been associated with Corn Products Sales Co. and Reichhold Chemical, Inc. Just prior to joining Mosinee he was technical director of Williamson Adhesive, Inc., in Skokie, Ill.

Westvaco Announces Promotions at Luke Mill

West Virginia Pulp and Paper Co. has announced the promotions of Howard E. Kincer to the position of superintendent of the lower paper mill at the Luke mill and of Ronald C. Jezerc to the position of superintendent of the technical service department, also at the Luke mill.

Mr. Kincer, who has been employed at the Luke mill since October 9, 1945, has been technical staff assistant to the assistant manager, production, since November 1, 1958.

In his new position, Mr. Kincer will be responsible for the operation of five paper machines at the Luke mill's lower mill. He succeeds John L. Olewine who is resigning October 1.

Mr. Kincer was first employed at the Luke mill as a chemist in the research department. In November 1951, he was named foreman of the pigment plant, and in 1952, was transferred to the paper mill as an operating engineer. In February 1956, he was assigned to the technical service department as a technical assistant dealing primarily with the planning for No. 8 paper machine and auxiliary services as a part of the mill's current $50 million expansion program.

For the past 10 months as technical staff assistant to the assistant manager, production, he has been working in a liaison capacity between the engineering and operating departments, dealing primarily with the design and installation of both Nos. 8 and 9 machines and auxiliary services.

Mr. Jezerc has been assistant superintendent of the technical service department since December 1958 and prior to that was chief chemist. He joined the company at the Luke mill in July of 1956 as a chemist in the main laboratory and three months later was promoted to the position of chief chemist.

A native of Cleveland, Ohio, Mr. Jezerc attended Ohio Wesleyan University, Delaware, Ohio, where he received a bachelor of science degree in chemistry in June 1951. That fall he started graduate work at the Institute of Paper Chemistry, Appleton, Wis., where he received his master's degree in chemical engineering in June 1953.

After two years of service in the Chemical Corps of the U. S. Army, Mr. Jezerc returned to work in September 1955 for the Paper Chemicals Division of Hercules Powder Co. where he had been employed for two months before entering service.

Simpson to Manage K-C's International Operations

G. Kenneth Crowell, executive vice president of Kimberly-Clark corporation, recently announced the appointment of James H. Simpson as manager of the corporation's International Division.

Simpson had been executive vice-president and treasurer of Kimberly-Clark's Mexican operations since 1957.

Martin Heads Northern Operations for Sonoco

Sonoco Products Co. has announced that on August 15th John H. Martin, vice president, assumed the responsibilities of G. W. B. White, former vice president in charge of northern operations. Mr. White, who has retired after 30 years of service, will remain with Sonoco as a member of the board of directors.

Mr. Martin has been in charge of branch plant operations at Atlanta, Ga.; Akron, Ind.; Longview, Texas; Los Angeles and San Francisco, Calif. He is now also responsible for Sonoco's plants at Philadelphia, Pa.; Phillipsburg, N. J.; Lowell, Mass.; and Mystic, Conn. Appointed to the new position of assistant to the vice president was Charles W. Coker, Jr.

St. Regis Promotes Two

Recently named to the post of manufacturing superintendent at St. Regis' Sartell, Minn. plant was Byron Steenburgh, Jr. who was previously assistant paper mill superintendent at the company's Deferiet, N. Y. mill. Succeeding Mr. Steenburgh at Deferiet was Herman La Mora who had been serving as relief assistant paper mill superintendent.

Mr. Steenburgh first began work at the Deferiet mill in 1933, later becoming a backtender and then a machine tender. In 1956 he was transferred to the company's Kalamazoo, Mich. plant as paper mill superintendent and a year later returned to Deferiet, serving as assistant paper mill superintendent until this latest promotion. Mr. La Mora joined St. Regis in 1930 and became boss machine tender in 1955.

"YOU'RE HIRED!"

Scott Promotes Two at Marinette

William W. Hobbs, formerly assistant industrial engineering manager (at Scott Paper Co.'s Marinette, Wis. mill) has been named industrial engineering manager. He replaces Michael A. Hoffmann who has been transferred to Scott's staff procurement division in Chester.

Mr. Hobbs joined Scott Paper Co. in June 1952 and was promoted to his most recent position in August 1955.

Also at Marinette the promotion of Arthur G. Belaire to assistant paper mill superintendent has been announced.

Mr. Belaire, formerly production assistant to the paper mill superintendent, was employed as a machine tender in 1928, and gained his most recent assignment in July 1956.

McGougan Assistant to Abitibi President

D. W. Ambridge, president, Abitibi Power & Paper Co., Ltd., has announced the appointment of Archie C. McGougan as assistant to the president.

Mr. McGougan has been concerned with the marketing of pulp and paper products in world markets, and in his new responsibilities with Abitibi in Toronto, he will be responsible for the study of the world foreign trade situation in all its aspects.

Allred Moves Up at Mobile

Scott Paper Co. has announced the promotion of Felton O. Allred to the position of finishing shift supervisor —tissue at their Mobile, Ala. plant.

Mr. Allred makes the move from the job of roll machine attendant. He began his career with Scott in December 1955 and was named move-up supervisor in March of this year, and now has been promoted on a permanent basis.

Nisbet Made Allied Ass't Sales Manager

Promotion of John D. Nisbet to the position of assistant general sales manager of the Allied Paper Corp. has been announced.

Mr. Nisbet was formerly western sales manager, with offices in Chicago. An Allied employee for the past 23 years, Mr. Nisbet has also been head of the production schedule department for Allied for a 10-year period.

"That BIRD-JONSSON SCREEN is the best knotter there is."
"Where it really shines is for screening straw stocks"
"It's made to order for screening black liquor ahead of brown stock washers"
"Every good deink system uses Jonsson Screens"
"It's just the ticket for screening stock from refiners... from defibrators... from masonite guns"
"This is the screen for handling tailings from any primary screening system."

Whoa — gentlemen! You're *all* correct. The Bird-Jonsson Screen is the right screen for each and every one of those jobs. Ask for lay-outs and estimates on *your* application.

BIRD MACHINE COMPANY

SOUTH WALPOLE, MASS.
REGIONAL OFFICES: EVANSTON, ILLINOIS
PORTLAND, OREGON • ATLANTA 9, GEORGIA
Canadian Manufacturers of Bird Machinery
CANADIAN INGERSOLL-RAND COMPANY, Limited, Montreal

BIRD MACHINE'S 50th YEAR OF SERVICE TO INDUSTRY

TAPPI Engineering Conference Program

October 12-15, 1959,
Hotel Penn Sheraton,
Pittsburgh, Pa.

Monday, October 12, 1959

FIRST SESSION: Opening remarks, J. R. Curtis, Scott Paper Co., General Chairman.

SECOND SESSION: Steam and Power, R. V. Knapp, Mosinee Paper Co., Mosinee, Wis., Chairman.

"Progress Report on Atomic Power," by J. W. Magee, Jr., J. H. Wright, Westinghouse Electric Corp., Phila., Pa.

"Equitable Allocation of Costs for Process Steam and Electric Power in Paper Mill Plants," by G. D. Farrar, General Electric Co., Atlanta, Ga.

PANEL DISCUSSION—Economic Aspects of Pressures and Temperatures for Pulp and Paper Mill Power Plants. Moderator: J. G. Hoad, John G. Hoad & Assoc., Inc., Ypsilanti, Mich.

"Turbines-Generators," I. H. Landes, General Electric Co., Schenectady, N. Y.

"Power Boilers," H. B. Wallace, Jr., Foster Wheeler Corp., New York, N. Y.

"Recovery Boilers," W. J. Darmstadt, Babcock and Wilcox Co., Barberton, Ohio, and F. W. Hochmuth, Combustion Engineering, Inc., New York, N. Y.

"Mill Experience," T. J. Judge, International Paper Co., Mobile, Ala.

THIRD SESSION: Maintenance Engineering, R. Q. Conner, The Crossett Company, Crossett, Ark., Chairman.

"The New Challenge in Tomorrow's Maintenance," by H. P. Evans, C. F. Braun & Company, Alhambra, Calif.

"Up-to-date Training in Paper Mills," by H. W. Smith, St. Regis Paper Company, Pensacola, Fla.

"Organized Lubrication — A Case Report," by J. Box, Gaylord Container Corporation, Division of Crown Zellerbach Corporation, Bogalusa, La.

COMMITTEE LUNCHEONS

FOURTH SESSION: Electrical Engineering, R. F. Sorenson, St. Regis Paper Co., Jacksonville, Fla., Chairman.

"Electrical Control of Fourdrinier Helper Drives," by S. J. Campbell, Westinghouse Electric Corp., Pittsburgh, Pa. and D. C. Pier, Beloit Iron Works, Beloit, Wis.

"General Purpose Semiconductor Rectifier Power Supplies in the Paper Industry," by G. E. Shaad, General Electric Co., Schenectady, N. Y.

"Winder Power Requirements-Project No. 740 Report," by M. H. Fisher, Westinghouse Electric Corp., East Pittsburgh, Pa.

"Safety in Mill Electrical Work," by M. L. Perkins, Fraser Paper Co., Madawaska, Me.

"Power Transfer Within Wet Felts," by M. J. Osborne, Bowaters Southern Corp., Calhoun, Tenn., C. C. Collins, General Electric Co., Schenectady, N. Y., and J. Knowles, Huyck Felt Co., Renssalaer, N. Y.

"Recommended Practices and Purchase Specifications for Medium Voltage Motor Controllers," by H. W. Wright, Allis-Chalmers Mfg. Co., West Allis, Wis. (Presentation by Title Only).

"Supercalender Power Requirements-Project No. 368 Report," by R. J. Farrell, Reliance Electric and Manufacturing Co., Cleveland, Ohio. (Presentation by Title Only).

FIFTH SESSION: Mechanical Engineering, M. N. Davis, Kimberly-Clark Corp., Neenah, Wis., Chairman.

"Recent Improvements in Pulpwood Grinders for Insulating Fibreboard Manufacture," by W. F. Fields, Armstrong Cork Co., Lancaster, Pa.

"Extensible Paper Machinery," by C. E. Hill, W. Va. Pulp and Paper Co., Covington, Va.

"Appraisal of the Design and Construction of Horizontal Size Presses," by H. A. Smith, Rice Barton Corp., Worcester, Mass.

Tuesday, October 13, 1959

SEVENTH SESSION: Civil Engineering, W. Pittam, Stone & Webster Engineering, Inc., Boston, Mass., Chairman.

"Welded Tanks and Pressure Vessels for the Pulp and Paper Industry," by R. A. Jackson, Chicago Bridge & Iron Co., Seattle, Wash.

"Lateral Forces on Pulp and Paper Mill Structures," by J. H. Bringhurst, J. E. Sirrine Co., Greenville, S. C.

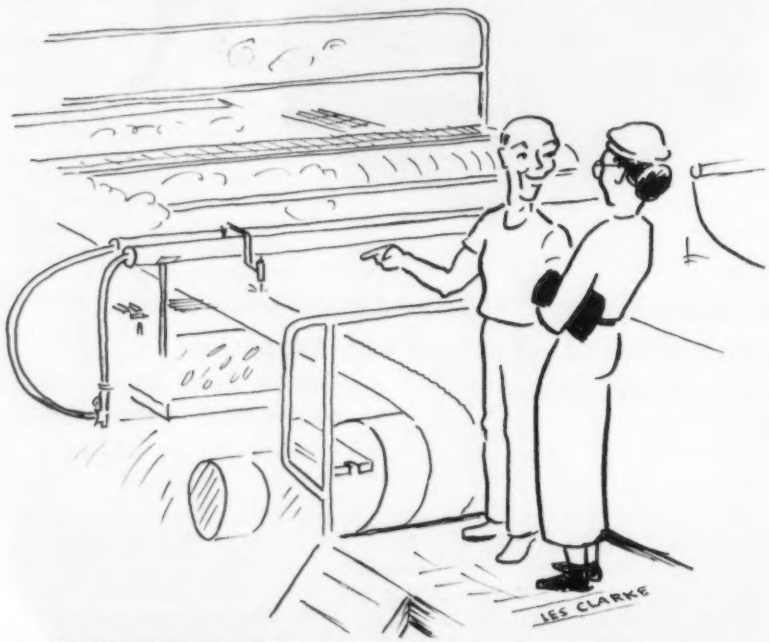
"Various Types of Outfall Lines into Bodies of Water," by W. Pittam, Stone & Webster Engineering Co., Boston, Mass.

EIGHTH SESSION: Engineering Economics, G. W. Sargent, Mercury Engineering Corp., Milwaukee, Wis., Chairman.

"The Dollars and Sense of Capital Equipment Justification," by W. Bricker, Diamond-Gardner Board and Carton Co., Middletown, Ohio.

"Calculating the Return on Proposed Projects," by R. I. Reul, Food Machinery & Chemical Corp., New York, N. Y.

NINTH SESSION: Process Instrumentation, J. K. Powell, Bowaters Southern Paper Corp., Calhoun,



This little gadget is called a . . . er . . . ah . . . ah . . . wet end paper cutter

Tenn., Chairman.

"Instrumenting The Experimental Bradley Soda Recovery Process," by J. W. Taylor, Consolidated Water Power and Paper Co., Wisconsin Rapids, Wis.

"A Versatile New Consistency Regulator," by K. I. Mummé and H. W. Swanson, Kimberly-Clark Corp., Neenah, Wis.

"The Organization and Operation of an Instrument Department in a Paper Mill," by J. K. Powell, Bowaters Southern Paper Corp., Calhoun, Tenn.

COMMITTEE LUNCHEONS

TENTH SESSION: Fluid Mechanics, N. Shoumatoff, W. Va. Pulp & Paper Co., New York, N. Y., Chairman.

"Patterns of Circumferential Flow in Cylindrical Annuli," by A. H. Nissen and F. C. Haas, Rensselaer Polytechnic Institute, Troy, N. Y.

"Flow Instability on the Fourdrinier Wire-Progress Report of TAPPI Projects No. 156," by C. S. Yih and A. C. Spengos, University of Michigan, Ann Arbor, Mich.

"Paper Machine Inlet Performance with Relation to the Fourdrinier Wire," by H. C. Nelson, Kimberly-Clark Corp., Neenah, Wis.

"The Effects of Fibers on Velocity Distribution, Turbulence and Flow Resistance of Dilute Suspensions-Report of TAPPI Project No. 147," by J. W. Daily and G. Bugliarello, Massachusetts Institute of Technology, Cambridge, Mass.

ELEVENTH SESSION: Sanitary Engineering, W. A. Moggio, Lake States Yeast Corp., Rhinelander, Wis., Chairman.

Theme: "Air—Its Role in Waste Treatment and Disposal."

"Flotation Methods," by L. L. Klinger, Whippany Paper Board Co., Inc., Whippany, N. J.

"Aeration in the Stabilization of Mill Effluents," by R. O. Blosser, National Council for Stream Improvement, New York, N. Y.

"River Reaeration," by A. J. Wiley and B. F. Lueck, Sulphite Pulp Manufacturers' Research League, Appleton, Wis.

COCKTAIL PARTY AND BANQUET

Toastmaster: M. H. Fisher, Westinghouse Electric Co., East Pittsburgh, Pa. Speaker: Countess Maria Pulaski, "My Life as a Spy."

Wednesday, October 14, 1959

TWELFTH SESSION: Corrosion I, E. W. Hopper, Pittsburgh, Pa., Chairman.

"The Use of Titanium in the Pulp and Paper Industry," by W. K. Boyd, Pattelle Memorial Institute, Columbus, Ohio.

"Corrosion of Fourdrinier Wires," by J. Gerhauser, Appleton Wire Works, Appleton, Wis.

"Digester Corrosion at Union Bag-Camp Paper Corp.," by H. B. Harris, Jr. and L. Parks, Union Bag-Camp Paper Corp., Savannah, Ga.

"Corrosion of Mild Steel in Alkaline Pulping Liquors." Final Report of Project Partially Sponsored by TAPPI Research Grant No. 86 by R. B. Kesler, Institute of Paper Chemistry, Appleton, Wis.

THIRTEENTH SESSION: Industrial Engineering and Materials Handling, B. C. Kendall, Crown Zellerbach, Corp., San Francisco, Calif., Chairman.

"Do You Really Mean It?" by J. E. Angle, U. S. Steel Corp., Pittsburgh, Pa.

"Broke Handling at Glatfelter's," by R. D. Owen, P. H. Glatfelter Co., Spring Grove, Pa.

FOURTEENTH SESSION: Chemical Engineering I, Systems Engineering and Operations Research, E. F. Thode, The Institute of Paper Chemistry, Appleton, Wis., Chairman.

(Continued on page 68)

Just Like Panning for Gold!

You'll get exceptionally low "first cost"

You'll use minimum power

You'll need less maintenance

with the

Kalamazoo "Side Hill" Washer

These practical slide washers give a better and more effective wash job than other washing methods. They may also be used as thickeners and savealls. These units are designed by Kalamazoo engineers — experts in serving the paper industry for more than 90 years. Our experience enables us to completely prefabricate the units of top quality materials. Installation supervision can be furnished.

Laboratory size units are available for experimental purposes in determining the proper angle and screen mesh.

Write today for information on capacities and cost estimates.

WOOD TANK DIVISION

Kalamazoo TANK & SILO CO.

330 HARRISON ST.
KALAMAZOO, MICH.

NEWS OF CONVERTERS

Whiting Paper Company Acquires Tabulating Card Company

A merger between the Whiting Paper Co. of Holyoke, Mass. and the Tabulating Card Co. Inc. of Princeton, N. J., has just recently been effected.

The Princeton firm has three plants in the Princeton area, one that builds office machinery equipment, one where paper is carbonized and a third where the printing of the cards is done.

The Whiting Paper Co. becomes the parent firm of this enterprise and the New Jersey plants are to be known as divisions of the Whiting Paper Co.

William Whiting of Holyoke is president of this combined operations. He was president of the Whiting Paper Co. before the merger. Dwight Shaw is treasurer and William Spears is executive vice-president. Both Shaw and Spears are residents of Princeton.

The Whiting Paper Co., one of the oldest fine paper making firms, sold its two mills in Holyoke several months ago to Whiting & Co., Inc.

It maintained its stationery division and has continued to operate it in rented space in the Whiting & Co., Inc., plant.

Caton Div. Sales Head To Manage Saratoga Plant

Edward P. Finch, presently sales manager of the General Foods Carton & Container Division, Battle Creek, Mich., will be manager of the new Carton & Container Eastern Division plant, now under construction at Saratoga Springs, N. Y.

The General Foods Corp. also announced that Henry R. Baughman, operations sales manager of C & C, will succeed Mr. Finch, and that John E. Crossen has been appointed operations manager in the Post Division, Kankakee, Ill., to succeed Harold P. McGrath, who is retiring.

Production Supt for Federal Marion Plant

Richard Buck, a 20-year veteran with Federal Paper Board Co., Inc., has been named plant superintendent of the Lindley Box and Paper Division in Marion, Ind., according to an announcement from headquarters in Bogota, N. J.

He is replacing Otto Ohliger as production supervisor in the Marion plant.

Mr. Ohliger has been transferred as plant superintendent in the Morris Paper Mills Division, Morris, Ill.

Fibre Box Ass'n Announces Annual Meeting Program

Plans have been completed for the 20th Annual Meeting of Fibre Box Association to be held at the Waldorf-Astoria in New York City on Thursday and Friday, October 8 and 9, 1959.

Speakers at the meeting include Godfrey Schmidt, attorney and formerly monitor for the teamsters union who will talk on Labor; Jackson Martindell, president, American Institute of Management will discuss how to appraise management of an organization, and Bill Gove, president of the Bill Gove organization who will discuss merchandising. Peter W. Hoguet, president of the Econometric Institute will forecast business conditions for the industry. In addition talks will be given by staff and committee members on statistics, traffic and technical matters.

O-I Begins Construction Of Facilities in Georgia

Construction of an L-shaped warehouse and plant which will connect the Valdosta, Ga., paper mill and the multiwall bag plant of Owens-Illinois Glass Co. will begin immediately.

The 80,000-square-foot expansion will be used for storage of roll paper stock of both the mill and bag plant and will replace existing uncovered storage areas. The contract has been let to Southeastern Construction Co. of Atlanta.

Built on a concrete slab, the section of the steel-frame warehouse adjoining the bag plant will be enclosed with corrugated asbestos siding and the area toward the mill will remain open. All will be covered with a flat built-up roof.

The base of the new L-shaped building adds 120 feet to the back of the bag plant. The distance covered between the existing buildings is 484 feet.

Bienvenu to Head C-Z Gaylord Division

G. J. Bienvenu has been appointed general manager of the Southern division of the Gaylord Container division, Crown Zellerbach Corp.

He will live in Bogalusa, La., and much of his time will be spent in New Orleans, where he started with Gaylord in 1925. In this new position, he will assist in the co-ordination of production and sales.

Mr. Bienvenu was transferred to Bogalusa in 1927 after two years in New Orleans. In 1929 he was named superintendent of Gaylord's box plant and in 1940, general superintendent. Then, in 1957, he was promoted to general production manager of Gaylord's shipping container plants in St. Louis.

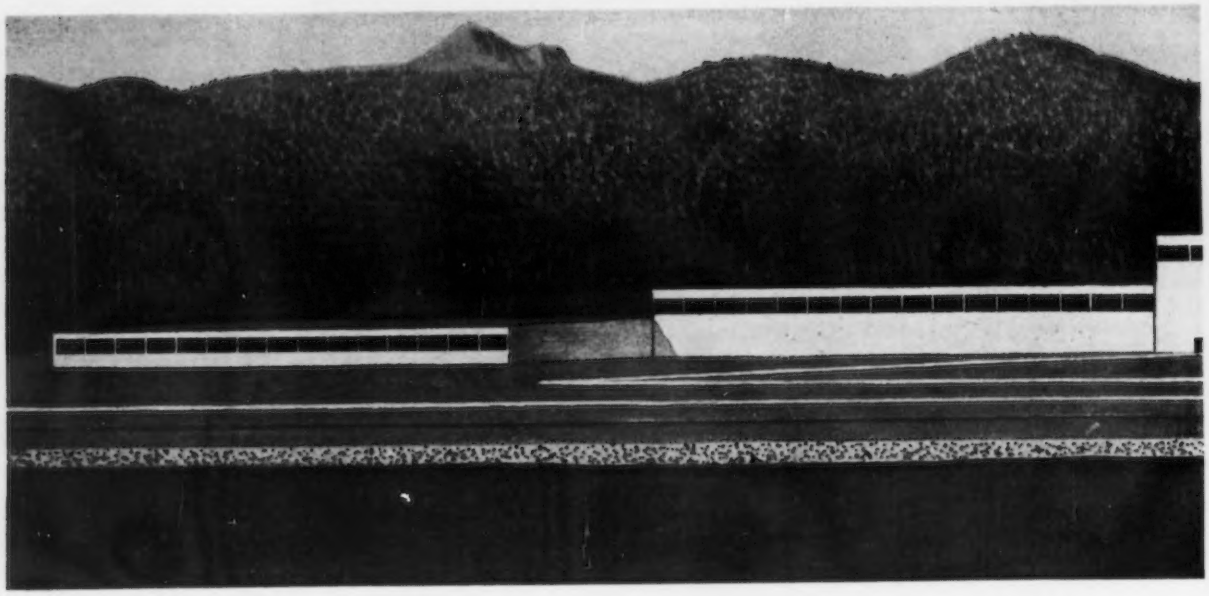
Willmore Promoted to Bemis Boston Office

B. L. Willmore has been named assistant to the vice president in charge of procurement and materials of Bemis Bro. Bag Company. He formerly was head of the sales economics section and assistant secretary of Bemis in the company's General Offices in St. Louis, Mo. In his new position, Mr. Willmore will be in the Boston executive offices.

Celgar Kraft

IN 1961 . . .

A new source of Canadian



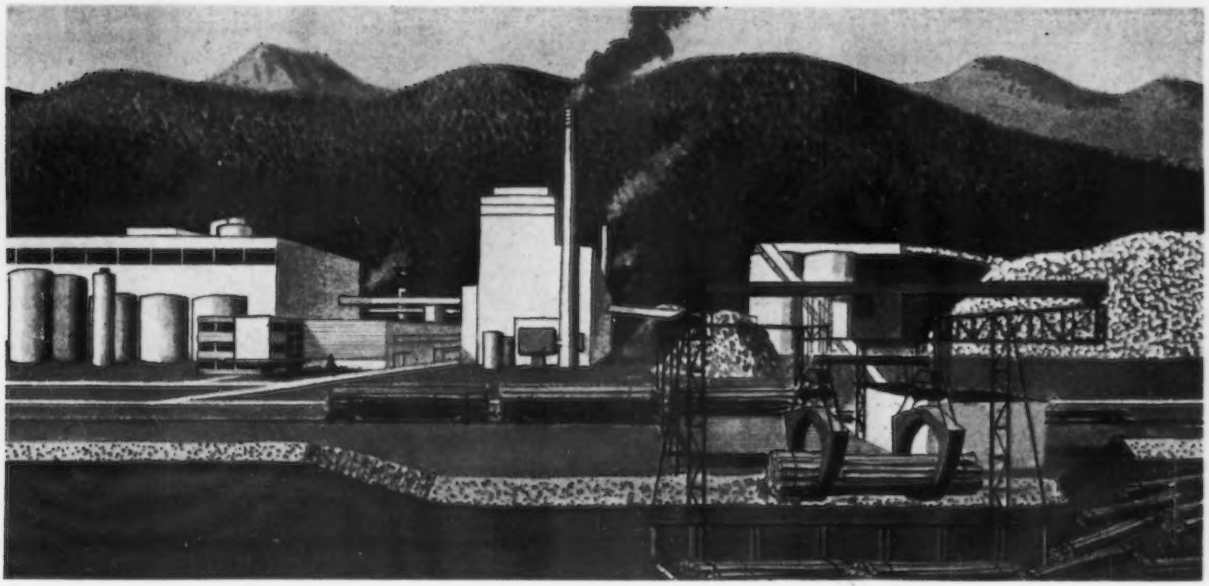
Who is CELGAR?

Celgar Limited is a Canadian company affiliated with the Celanese Corporation of America. It was incorporated in September, 1951, to establish a forest products industry in the Arrow Lakes area of British Columbia, and now operates two sawmills on the Columbia River. Celgar's associate company, Columbia Cellulose Company, Limited, operates a dissolving grade sulphite mill near Prince Rupert, on the northern coast of British Columbia.

Where is CELGAR?

Celgar's pulp mill, with new sawmill facilities adjoining, is under construction on the Columbia River just two and one-half miles west of Castlegar, in the southern interior of British Columbia. The Company's Tree Farm Licence area stretches 200 miles through the Arrow Lakes District to the north. The Columbia River, which drains the Arrow Lakes Basin, crosses the U.S. border only 18 miles below the mill site, flowing on through Washington and Oregon to the Pacific.

Market Bleached Kraft Paper Pulp



500 TONS DAILY

Early in 1961, Celgar's new high quality market pulp mill will go on stream. It will have a designed daily capacity of 500 tons of bleached kraft paper pulp.

Celgar holds in perpetuity almost 900,000 acres of productive forest land containing large volumes of pulpwood species such as hemlock, spruce, Douglas fir and balsam. Adjacent timber lands contain more than three and one-half times the pulpwood volume of the licence area. These wood resources ensure that Celgar has the ability to meet future demands. The total wood supply could support over 1,500 tons of pulp production daily in perpetuity.

THE QUALITY OF CELGAR KRAFT

The quality characteristics of Celgar Kraft have been established through a continuing program of wood sampling, pulping, bleaching and papermaking in Celgar's own laboratories and in the experimental plants of independent pulp and paper organizations. The long, tough fibres from high-density softwoods develop high bursting strength coupled with outstanding tear resistance over a wide range of freeness and in a variety of stock preparation equipment. The modern Celgar process design and equipment will preserve these inherent characteristics while achieving the highest level of brightness, cleanliness and uniformity to meet the exacting demands of the trade.

COLUMBIA PULP SALES LIMITED has been formed to distribute Celgar Kraft pulps and Columbia Cellulose sulphite pulps. Offices are located at:

1030 West Georgia St., Vancouver 5, B.C. (MU 4-8311) 1600 Dorchester St. West, Montreal 25, P.Q. (WE 5-1112)

Men with open, hungry minds

Open letter to suppliers who serve the paper and pulp industry

Ever stop to think what mill men want to know when they read one of your company's ads?

Chances are they've *seen* the ads many times before. In a general way they already know who your company is, what products it makes. They no doubt have an impression as to the quality and performance of your products.

Then one day, probably because there's an acute problem that concerns the product you make, they seek out your ad. This is the time when they say, in effect, "All right, go ahead and tell me all about your product. I'm interested."

So they read your ad—carefully, thoughtfully, thoroughly. To find out what your product can do; what it can't. To learn its capacity, or performance range. This is your opportunity to tell them as much as possible about your product within the limitations of the advertisement. And the logical way to conclude is to offer more information and to tell the interested reader how to get it, fast.

* * *

This week some 9,000 paper and pulp mill readers will pick up the very issue of PAPER TRADE JOURNAL that you now hold in your hands. Most of them will see your company's ad if it happens to be in this issue. And most of them—let's face it—will get little more than a passing impression *because at the moment they are not actively in the market for your product.*

But among the 9,000 there are *always* some, week in and week out, who are ready to spend as much time . . . to absorb as much information . . . as you give. They are the men who will read your ads—and those of your competitors—with open, hungry minds.

George E. Jenkins PUBLISHER

PAPER TRADE JOURNAL

Corrosion can't hide in this fluid end!

You can easily detect corrosive action *before* breakdown with this Goulds Fig. 3715 centrifugal chemical pump.

Turn a few bolts and off comes the casing cover. Then you can inspect the impeller and clean out the insides *without disturbing pipe connections.* A millwright can do the entire job alone.

Mechanical seal or stuffing box is subjected to suction pressure only, reducing the sealing problem to a minimum.

The 3715 handles a wide range of corrosive liquids. It is available from stock in Type CF-8M (316) stainless, Gould-alloy 20, all-iron, aluminum bronze, bronze-fitted or iron with stainless trim. Ten sizes. Temperatures to 350 F. Capacities to 720 GPM, heads to 280 feet.

Write for Bulletin 725.4: Goulds Pumps, Inc., Dept. PT-99, Seneca Falls, N. Y.

GOULDS PUMPS

TABLE I

Cost Considerations

Solids Removal Practices In Southern Kraft and Newsprint Mills

The information for this timely survey was collected firsthand during visitations to 15 various mills in 9 Southern states. Such capital and operating costs data as were available are included.

Herbert F. Berger,
Regional (Southern) Engineer,
National Council for Stream Improvement, Inc.,
New York, N. Y.

This final report covers a study, undertaken at the request of the Southern Technical Sub-Committee, of methods for removing suspended solids from the effluents of the larger pulp and paper mills of the South. Data were obtained through personal visits and a questionnaire survey of member kraft and newsprint mills in nine states of the Southern and South Central Regions of the National Council.

The high interest and excellent cooperation exhibited by the Industry during the course of this survey resulted in this compilation of complete and authentic information designed to guide the future actions of mills faced with the problem of how best to reduce their suspended solids loads to the receiving streams.

In most kraft and newsprint mills, in-mill conservation of water and fiber is practiced through the use of white water savealls of one type or another. It is the suspended solids not recovered by the savealls and those originating in pulping and bleaching operations that must be removed by external treatment, usually sedimentation. These solids settle readily, but, as shown below, their removal presents two major problems: (1) the space required for treatment; (2) ultimate disposal of the sludge.

From Technical Bulletin 120, distributed by National Council for Stream Improvement, Inc., 271 Madison Ave., New York 16, New York.

Survey Results

All data obtained in this survey are presented in Tables I through IV. The pertinent information is summarized in Tables I and II, and the breakdown by individual mills is given in Tables III and IV.

In addition to the mills covered by the tables of data, several others either have just begun a program of suspended solids removal or are planning such a program. These include one newsprint mill now treating its groundwood mill and newsprint effluents through an upflow clarifier and a flotation unit in parallel with 100 per cent re-use of the recovered fiber. A bleached kraft mill has, under construction, a 300-foot diameter earthen-wall clarifier, while another kraft mill plans to rectangular ponds in parallel.

The suspended solids losses, expressed as per cent of production, shown in the tables, represent mainly fiber, except for Mill H, in which case the suspended solids are largely lime mud.

Inspection of the data of Table III reveals significant differences in solids losses dependent on production. Unbleached kraft mills average only about 2.00 per cent loss while the bleached kraft mills report an average 4.50 per cent loss. Groundwood operation understandably further increases fiber losses to an average 7.10 per cent in the Southern newsprint mills. Individual variations from mill to mill arise, of course, from differences in mill practice regarding water conservation, general "housekeeping" and variations in saveall operations.

The data of Tables I and II show that median and average suspended solids removal effected by mechanical clarifiers is only very slightly better than the removal obtained by settling ponds. Retention time through the ponds, however, is about four times that through a clarifier, resulting in clarifier areas approximately one-tenth those needed for ponds, and shown in Table I and II under "acres per ton of daily production." But, as indicated in Table II, this apparent space-saving feature applies to the clarifier only. Seventy-five per cent of mills with mechanical clarifiers require considerable additional space for sludge basins for the ultimate disposal of the settled solids. When the total area requirement is examined, a median 0.054 acre per ton of production appears to be required by the use of clarifier and sludge basin, compared to only 0.017 acre in the case of settling ponds.

This latter figure, however, is often misleading, since each mill now

TABLE I

SUMMARY OF SOLIDS REMOVAL PRACTICES IN SEVEN MILLS USING NATURAL OR MAN-MADE PONDS

	Max.	Min.	Median	Avg.
Volume, million gal./day	45	0.7	25	20.6
Area, acres, total	18	0.7	7.2	9.5
Area, acres per ton of daily production	0.046	0.011	0.017	0.023
Average depth, ft.	10	3	6	6.5
Retention, hrs.	38	3	20	21
Influent suspended solids, lbs/1000 gal.	4.2	0.4	2.9	2.7
Solids loss, % of production	5.8	3.5	5.2	4.1
Effluent suspended solids, p.p.m.	94	5	38	46
Suspended solids removal, %	90	72	85	83
BOD removal, %	12.5	7.4	10	10
Pond cleaning cost, per cu. yd.	2.00	0.23	0.48	0.73
per ton dry solids	5.68	0.66	2.10	2.99

using settling ponds does use an indeterminate acreage for dumping the sludge derived from the cleaning of the ponds. As discussed below, the problem of ultimate sludge disposal requires some renewed, vigorous research.

Criteria

Where an effluent, after the removal of settleable solids, is discharged to a stream, the maximum allowable remaining suspended solids will depend entirely on the stream's volume and velocity. A large, deep stream affording a high dilution ratio, for example, may not tolerate even three or four tons of suspended solids, while a swift, shallow stream of much lower flow may be able to carry away five to eight tons a day.

If an effluent is to be subjected to biological oxidation, whether by activated sludge, trickling filter, or oxidation pond, a high degree of suspended solids removal is a prerequisite for efficient, trouble-free oxidation. Suspended solids in excess of approximately 0.5 pound per 1000 gallons will add non-active weight to an activated sludge, tend to clog trickling filters, and deposit in an oxidation lagoon. This latter deposit will then commence to digest anaerobically, producing malodorous intermediates, and unsightly islands of floating sludge.

The criteria upon which the capacity of a sedimentation unit for paper and pulp mill effluents is based are detention period and/or overflow *(1, 2)*. In thicker suspensions, solids separation is limited by the unit area, expressed as square feet per ton of solids per day or per hour *(3)*. Most waste problems in our industry involve such dilute suspensions that the solids-handling capacity of a basin is not approached (Table IV).

It is important to note that, as in all waste treatment design, each mill presents its own problems. Generalizations based on past experiences can be made, but final design features must evolve from laboratory evaluation of each particular waste.

An examination of Table IV reveals, for example, that an equipment manufacturer generally recommends 5-6 hours retention of pulp and paper effluents in a clarifier, but three mills allow only half this retention time and still get good suspended solids removal. One of these, Mill I, even approaches the upper limit in overflow rate. On the other hand, it is easy to see from Table IV why the clarifier at Mill D is the most inefficient.

Although it cannot be recognized in any of the tables of data, the high percentage removals shown for some of the ponds are those obtained with clean basins. As the basin fills, shortly before cleaning time, solids removal efficiency always falls off, due partly to decreased retention time, partly to gasification arising from anaerobic digestion of the accumulated sludge.

Cost Considerations

From the discussion of the data presented in this report, it appears that the choice between settling ponds and mechanical clarifiers must be decided on the basis of:

1. Available land area and its topography, and
2. Economics, i.e., capital expenditure and operating costs.

Applying the information obtained from this survey and from discussions with equipment manufacturers, a very rough estimate of comparative costs for 85 per cent removal of suspended solids from the effluent of a 400-ton bleached kraft mill may be made as follows:

Volume to be treated ..... 24 million gal./day
Suspended solids load ..... 3.0 lbs./1000 gal.
Gravity flow from mill to pond or clarifier.

PONDS

Design two ponds to be operated in parallel (one in use while the second drains and is cleaned) each for 20 hours retention, approximately 10 feet deep.

Total capacity: 40 million gallons, or 200,000 cubic yds.

Cost of excavation and diking, at $0.48 per cubic yard (the median value, see Table I): $96,000.

If we assume an average of four basin cleanings a year, with each pond one-fourth full of sludge at the time of cleaning, then:

25,000 cubic yds. @ $0.48/cubic yd. = $12,000 × 4 cleanings, or an operating cost of $48,000 per year. This amounts to about 34 cents per ton of production, or $1.90 per ton of dry solids, which checks very closely with the median $2.10 per ton of dry solids shown in Table I. It may be

TABLE II

SUMMARY OF SOLIDS REMOVAL PRACTICES IN EIGHT MILLS USING MECHANICAL CLARIFIERS[a]

	Max.	Min.	Median	Avg.
Volume, million gal./day	40	7	27	25
Clarifier size, ft—diameter	500	100	250	255
Clarified size, av. depth, ft.	25	12	18	18
Total area, acres/ton prodn.[b]	1.0	0.003	0.054	0.164
Area, clarifier only, acres/ton prodn.	0.0043	0.0002	0.0019	0.0021
Retention, Hrs.	16.5	2	4.3	6.0
Influent suspended solids, lbs/1000 gal.	7.7	0.9	3.0	3.4
Solids loss, % of production	10.0	2.2	4.5	5.0
Effluent suspended solids, p.p.m.	87	10	32	44
Suspended solids removal, %	95	33	91	85
BOD removal, %	15	13	14	14
Underflow consistency, %	2.0	0.3	0.6	0.8

Notes:
[a] Six of these have sludge lagoons
[b] Clarifier plus lagoon, where applicable

TABLE III
SURVEY OF SOLIDS REMOVAL PRACTICES IN 15 SOUTHERN KRAFT AND NEWSPRINT MILLS

	Unbleached Kraft			Bleached Kraft					Bleached and Unbleached Kraft			Bleached Kraft and Groundwood			
Mill	A	B	C	D	E	F	G	H	I	J	K[3]	L	M	N	O
Volume: million gal./day	40	7	7.3	20	24	25	8.7	45	10	33	0.7	30	39	30	25
Removal Method	C	C	P's	C	C	P's	P's	P's	C	P's	P's	C	C	C	P's
Clarifier Size: diameter, ft.	500	110	—	150	250	—	—	—	100	—	—	250	380	300	—
avg. depth, ft.	23.5	13	—	12.5	12	—	—	—	12	—	—	25	23	23	—
Settling Pond: area, acres	—	—	7.2	—	—	7	4.7	16	—	13.8	0.7	—	—	—	18
depth, ft.	—	—	5	—	—	3	5	10	—	10	7	—	—	—	6
Sludge Basin Area: acres	—	640[1]	—	25.6	25	—	—	—	25	—	—	55	—	50	—
Total Area for Solids Removal: acres/ton production	0.004	1.0	0.012	0.053	0.078	0.011	0.014	0.046	0.034	0.020	—	0.055	0.003	0.085	0.030
Retention Time: hrs.	16.5	6	38	2.3	3	3	16	24	2	16	4–36[4]	3	5.5	10	28
Influent Suspended Solids: lbs./1000 gal.	2.7	2.8	0.4	1.1	0.9	3.0	4.1	4.2[2]	7.7	1.5	180[4]	3.1	4.0	5.1	2.8
Solids Loss: per cent of prod.	3.3	2.2	0.3	2.5	4.5	5.8	5.2	—	4.5	3.5	—	4.7	8.0	10.0	5.6
Effluent Suspended Solids: p.p.m.	31	10	5	87	10	35	42	75	70	27	1000[4]	82	32	33	94
Suspended Solids Removal: per cent	91	95	90	33	90	90	76	85	89	85	95	92	93	95	72
BOD Removal: per cent	—	—	—	—	15	—	8	—	14	12.5	—	13	—	—	—
Clarifier Underflow Consistency: per cent	0.7	0.7	—	0.4	0.3	—	—	—	2.0	—	—	0.5	0.4	1.0	—
Pond Cleaning Cost per cu. yd.	—	—	0.23	—	—	—	—	0.25	1.00	0.48	2.00	—	—	—	0.71
per ton dry solids	—	—	5.00	—	—	—	—	0.66	—	1.51	5.68	—	—	—	2.10

Notes:
[1] Extremely shallow, 1-foot to 2.5 feet
[2] Mostly lime mud
[3] This mill does not settle the usual machine waters, bleach liquor, and pulp mill effluents, but ponds only the very high solids wastes, such as dregs, centricleaner rejects, lime sludges, etc.
[4] Not included in average, because of unique operation. (see Note 3.)

noted here that an average cost for disposal of paper mill sludge from midwest drying basins is $2.00-3.00 per ton of dry solids.

CLARIFIER

Design for six-hour retention of 24 million gallons per day requires 6 million gallons, or 800,000 cubic ft. capacity. A 20-foot average depth then requires a 250-foot diameter clarifier. The installed cost of a rake mechanism this size is about $46,000. If the clarifier floor and sidewalls are to be concrete, it is estimated that all concrete costs, including center pier and tunnels will be about $70,000. Excavation for this installation, at $0.48 per cubic yard, adds another $20,000. Exclusive of sludge pumps and piping, the estimated clarifier cost totals $136,000.

Add to this cost the excavation of a sludge basin of 200 acre-feet, costing nearly $150,000. Initial investment for mechanical clarifier and necessary accessories then totals $286,000.

Operating costs for this solids removal method are estimated to be $26,250 per year, or 20 cents per ton of production, calculated as follows:

Power: 5 h.p.—rake mechanism
5 h.p.—sludge pumps
180 kw. hrs./day × 350 days = 63,000 kw. hrs./yr. @ $0.0065/kw. hr. (av.) = $410,000.

And, adding 200 per cent to this figure for maintenance, a sum of $1250 per year is obtained. Based on information obtained from the mills surveyed, a sludge basin receiving clarifier underflow requires cleaning or expansion every three to five years. The ability of a basin to dewater and compact the delivered sludge is dependent on soil conditions and rainfall. Assuming that the 3 lbs. of solids per 1000 gallons ultimately must be disposed of in some manner (the sludge basin may be considered only as long-term storage), 12,600 tons of dry solids per year are involved. Using the near median cost of $2.00 per ton of solids, $25,000 may be considered the yearly sludge disposal cost, adding up to the $26,250 yearly estimate stated above.

Again, it must be emphasized that these costs are very rough estimates, subject to change due to factors too numerous to discuss here. It is felt, however, that most of the assumptions made lead to conservative estimates with built-in safety margins. For example, if facilities for continuous or semi-continuous dredging are designed as part of new settling ponds, sludge moving costs very probably will be less than $0.48 per cubic yard. Also, earth moving during mill construction costs considerably less than if equipment has to be brought in for a special, relatively small excavation. Finally, it should be pointed out that the estimates above do not include the cost of land acquisition.

Summary

It appears that relatively short-period sedimentation is capable of removing a large bulk of the suspended matter from the effluents of large kraft and newsprint mills. Proper design and operation of the solids removal facilities result in a comparatively inexpensive treatment. The sludge so removed is generally disposed of upon the land either after being drained and allowed to partially dry, or removed continually by collector mechanisms and discharged to land disposal areas. The ultimate disposal of the sludge, however, has led to some presently insolvable problems.

Sludge dewatering investigations at the Kalamazoo College Projects of the National Council have yielded some results which are promising to some of the smaller mills faced with a sludge problem *(4*)*. But, so far, the newly developed methods offer no help to the mill attemping to dispose of 30-50 tons of dry solids each day.

TABLE IV

DESIGN FEATURES OF SOLIDS REMOVAL FACILITIES

Mill	Retention Hrs.	Overflow Rate gal/ft²/hr	Overflow Rate gal/ft/hr	Unit Area ft²/ton dry solids/day	Removal Efficiency, %
		Ponds			
C	38	1.0	——	200,000	90
F	3	6.9	5500	3,800	90
G	16	1.7	1340	11,600	76
H	24	3.0	——	6,400	85
J	16	4.6	4600	11,000	85
O	28	1.4	——	22,000	72
		Clarifiers			
A	16.5	6.8	950	4,500	91
B	6	31	835	950	95
D	2.3	48	1800	1 600	33
E	3	20	1280	2,700	90
I	2	53	1330	205	89
L	3	26	1600	1,050	92
M	5.5	14.5	1350	1,450	93
N	10	36	1800	460	95
Mfrs. General Recommendations*	5-6	30-54	——	300-850	——

Notes: * Obtained from past experiences of operating efficient clarifiers on similar wastes *(1,2)*

"SOMETHING WENT WRONG IN THE DIGESTER HOUSE AND THEY HAVE ANOTHER HARD COOK."

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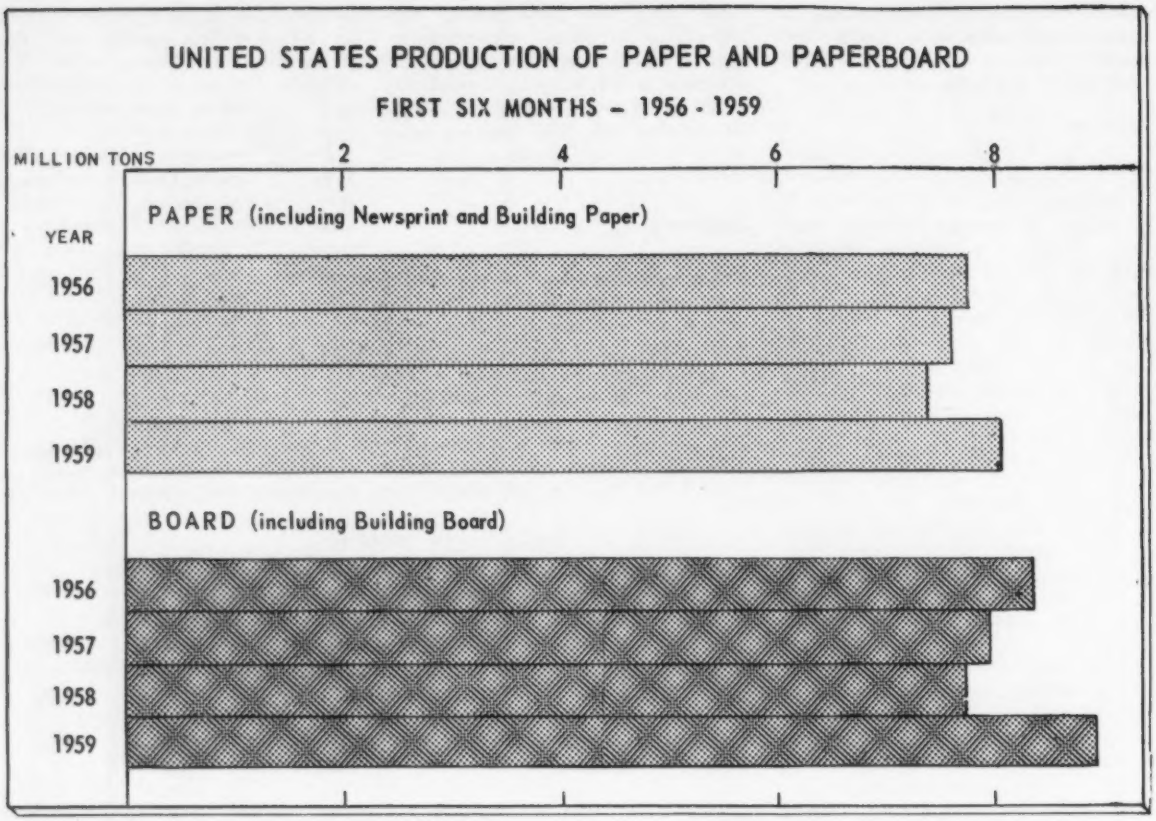
*See PAPER TRADE JOURNAL, June 1, 1959, pg. 26, for report on this research.



Production of Paper and Paperboard for First Six Months

Production of paper and paperboard during the first six months of 1959 totalled 17 million tons, the highest level of any first half in the industry's history. This was 13.6 per cent above the 1958 first half, and 5 per cent higher than the total in the comparable period in 1956, the previous record production year. Preliminary estimates show July 1959 production at 2,620,000 tons, 11 per cent above production in July 1958.

The data in the table show production of paper and paperboard by all Census grades for the first six months of 1959, the January-June totals for 1959 and 1958, and the percentage changes between the half-year totals. Total paper and paperboard production in the first half of 1959 was 13.6 per cent above the corresponding 1958 level; this increase was achieved by an 11.1 per cent increase in paper production, a 15.4 per cent increase in paperboard production, and a 17.2 per cent increase in production of construction paper and board. Comparable first quarter totals showed paper up 8 per cent, paperboard up 11 per cent and construction paper and board up 17 per cent over 1958.

Newsprint production, which was 4.6 per cent ahead of 1958 at the end of the first quarter of this year, was 8.5 per cent above 1958 production at the end of the half. Production of **machine-coated** paper during the first six months of this year was about one per cent above last year's comparable figure; production of **paper coated on two sides** was virtually unchanged in the 1959 first half from the year-earlier period, making this the only major grade of paper or board that did not show a gain for this period. Production of **uncoated book** grades, on the other hand, was up strongly from the year-ago totals.

All grades of fine paper in this tabulation showed substantial production increases in the first half of 1959 over their comparable 1958 totals. The **coarse paper** segment, which was 8.3 per cent above 1958 for the first quarter of this year, was up 13.6 per cent for the half. **Special industrial** plus absorbent paper was up 28.8 per cent over the year-earlier half, and **sanitary tissue** stock was up 8.2 per cent in this period.

The 15.4 per cent increase in paperboard production during the first half of 1959 reflected gains in practically all important segments of the paperboard total. **Container board** was up 17.6 per cent, **bending board** up 12.5 per cent, and **nonbending** board up 16.9 per cent. **Wet machine board** production in the first half of 1959 was 4.7 per cent ahead of last year. **Building paper** production, which was 14.6 per cent ahead of last year at the end of the first 1959 quarter, was 6.3 per cent ahead of 1959 for the half, while **building board** production, which was up 16.2 per cent at the end of the first quarter, was 26.0 per cent ahead of 1959 at the half, reflecting mainly a 44.8 per cent increase in hardboard production.

From the American Paper and Pulp Ass'n. September, 1959 Monthly Statistical Summary.

PRODUCTION OF PAPER AND BOARD—FIRST HALF 1959

(Thousands of Short Tons)

GRADE	Jan. 1959	Feb. 1959	Mar. 1959	Apr. 1959	May 1959	June 1959	Six Months 1959	Six Months 1958	Per Cent CHANGE 1959-1958
ALL GRADES, TOTAL	2,707	2,621	2,867	2,958	2,925	2,911	16,989	14,953	+13.6
PAPER, TOTAL	1,213	1,145	1,239	1,294	1,277	1,245	7,413	6,670	+11.1
Newsprint	159	145	156	151	166	158	935	862	+ 8.5
Groundwood paper, uncoated, total	73	67	79	80	76	72	447	401	+11.3
Publication and printing	59	53	63	63	61	57	356	322	+10.6
Converting	12	10	12	13	12	11	69	60	+15.8
Miscellaneous groundwood	3	3	4	4	4	4	22	20	+ 9.9
Paper-machine coated printing and converting paper, total	137	121	133	146	143	139	818	807	+ 1.3
Coated, one side	12	11	12	11	11	13	70	58	+19.2
Coated, two sides	125	110	121	134	132	126	748	749	— 0.1
Book paper, uncoated, total	148	142	159	159	160	167	934	812	+15.0
Publication and printing	86	81	90	90	90	90	527	484	+ 8.9
Converting	61	60	69	67	68	75	398	318	+25.5
Miscellaneous book	1	1	1	1	2	2	9	10	—17.2
Fine paper, total	138	136	148	152	149	147	871	779	+11.8
Writing paper, total	108	104	114	115	115	114	670	603	+11.1
Writing, rag (including index)	10	9	10	11	10	9	59	57	+17.6
Writing, chemical wood pulp	98	95	104	105	105	105	611	546	+11.9
Bristols (except rag index and bogus)	10	11	13	14	13	13	73	60	+21.9
Cover, text, and colored school paper	10	10	11	11	9	9	60	57	+ 5.5
Thin paper	11	11	11	12	12	11	68	59	+15.3
Coarse paper, total	321	312	328	352	346	332	1,991	1,752	+13.6
Unbleached kraft paper	233	227	244	258	254	242	1,458	1,261	+15.7
Wrapping	29	26	26	29	28	27	165	140	+17.6
Shipping sack	67	68	74	78	74	63	424	377	+12.7
Bag	84	81	84	89	92	96	526	483	+ 8.8
Other converting	53	53	60	62	60	56	343	261	+31.5
Glassine, greaseproof and vegetable parchment	15	14	13	16	14	15	87	85	+ 2.9
Other coarse paper	73	70	71	78	78	75	445	406	+ 9.6
Wrapping	21	20	18	19	20	19	117	115	+ 1.6
Shipping sack	4	5	5	6	6	5	32	27	+17.9
Bag	9	8	8	9	8	8	50	41	+21.4
Other converting	40	37	40	45	43	42	246	223	+10.6
Special industrial paper (including absorbent paper)	59	56	61	66	65	62	369	287	+28.8
Sanitary tissue stock, total	158	149	154	167	152	147	927	857	+ 8.2
Toweling	37	36	37	39	36	37	222	199	+11.2
Toilet tissue	73	68	71	79	69	65	425	392	+ 8.3
Napkin	19	18	19	20	19	19	115	107	+ 7.0
Facial tissue stock and other than napkin & toilet	22	21	21	22	21	19	125	119	+ 5.2
Other sanitary tissue stock and sanitary napkin stock wadding	7	6	6	7	7	7	41	39	+ 4.4
Tissue paper, except sanitary and thin	21	19	20	22	20	21	122	113	+ 7.9
PAPERBOARD, TOTAL	1,239	1,222	1,335	1,352	1,344	1,356	7,848	6,800	+15.4
Container board, total	659	652	714	734	740	743	4,241	3,605	+17.6
Liners	450	445	485	504	512	513	2,910	2,450	+18.8
Corrugating material	188	188	208	208	207	208	1,208	1,045	+15.6
Container chipboard	21	19	20	21	22	22	124	110	+12.0
Bending board, total	383	370	415	409	394	402	2,373	2,109	+12.5
Folding boxboard stock	224	221	255	252	241	253	1,446	1,264	+14.4
Special food board	122	109	126	122	120	116	714	654	+ 9.3
Other bending	38	41	34	35	33	33	213	192	+11.1
Nonbending board, total	94	92	95	96	96	98	572	489	+16.9
Setup boxboard, unpasted	66	64	65	66	68	67	397	352	+13.0
Other nonbending	27	28	30	30	29	31	175	138	+26.9
Special paperboard stock	93	99	102	103	103	104	603	540	+11.7
Cardboard	10	9	10	11	10	10	58	56	+ 3.9
WET MACHINE BOARD, TOTAL	12	11	12	13	13	13	75	72	+ 4.7
Binder's board	4	4	4	5	4	5	25	24	+ 6.7
Shoe board	4	4	5	5	5	5	27	23	+16.8
Other wet machine board	4	3	4	4	4	4	22	25	— 8.7
CONSTRUCTION PAPER AND BOARD, TOTAL	243	243	281	299	291	297	1,653	1,411	+17.2
Construction paper	98	98	119	120	117	119	670	630	+ 6.3
Hardboard and insulating board, total	145	145	162	179	174	178	983	780	+26.0
Insulating board, density 26 lbs. or less per cu. ft.	84	81	96	107	101	105	574	498	+15.3
Hardboard, density over 26 lbs. per cu. ft.	61	64	66	71	73	73	409	283	+44.8

SOURCE: U.S. Bureau of the Census—1959 data preliminary. Components may not add to totals due to rounding; per cent changes computed on unrounded data.

Communist China's Paper Industry Growing Rapidly

A considerable expansion has taken place in Communist China's paper industry during the past nine years. While factory* production before 1943 attained the maximum level of 165,000 tons, it was increased to 372,000 tons in 1952. The target of 655,000 tons of paper under the first five-year plan was exceeded and 920,000 tons were in fact said to have been produced. The production of factory-made paper in 1957 was thus 244.6 per cent of the 1952 level. The average increase on an annual scale was 19.4 per cent during the first five-year plan, while the figure for 1956 was 26.8 per cent.

Grade Range Expanded

There has been considerable improvement in the quality of production and the range of products. Before 1949 only 20 kinds of paper were in production, whereas in 1958, 162 new varieties of paper and cardboard were being produced. These included insulating and condenser paper, paper for use in wireless sets, photographic paper, paper for deep printing, drawing paper, trading paper, impregnated lining paper, cardboard for matrices and filters, waterproof cardboard for use in the motor industry, etc. Experiments are being currently planned at the Kiamusze combine to devise special kinds of technical paper: light-proof, semiconducting paper and paper for high tension cables.

These substantial advances have been made possible to a large extent by fuller use of the capacities of existing pulp and paper mills. From these an increased production amounting to 330,000 tons has been obtained.

The first five-year plan proposed the establishment of bases for the production of paper for technical purposes and to ensure a regular supply of paper for the printing trade. The expenditure on capital construction in the paper industry during the first five-year plan amounted to 369,000,000 yuans. During that plan, instead of the 10 pulp and paper mills originally proposed, 23 were actually built, one of them with Soviet technical assistance. Fifteen plants were put into operation, as a result of which the productive capacity of the country's pulp and paper industry was considerably increased.

Reconstruction of a large paper mill at Kwangchow (Canton) was completed at the end of 1957. The production of this factory amounts to about 60,000 tons a year of newsprint and other kinds of paper, i.e. more than seven times as much as in 1952. One paper machine put into operation in this factory has a capacity of 100 tons of newsprint a day.(!)

New Mills Constructed

The pulp and paper combine at Kiamusze, built with Soviet help, went into production at the end of 1957. The annual output of this plant will be 50,000 tons of technical papers, i.e. nearly twice the amount of this kind of paper as was produced throughout the country in 1956.

Another small paper plant was commissioned in Fukien province in May 1958, with a newsprint capacity of 100 tons a day. In the construction of this plant Soviet and East German technicians were employed. Equipment for the Kiamusze combine and for the Kwangchow and Anwhei paper factories was supplied by the other countries of the communist bloc. All the other new enterprises in the paper industry in China were, it is said, designed by Chinese engineers and supplied with Chinese equipment.

Raw Material Sources

Particularly successful was Chinese effort in widening the raw-material basis of the paper industry. In 1957, some 32 per cent of the raw material used in paper production consisted of wood and 68 per cent of various wood substitutes such as rice and wheat straw, sugar-cane stalks, bamboo etc., and of the total amount of wood used over 41 per cent was made up of brushwood and tops. Soviet specialists are said to have made considerable contribution in helping the Chinese to introduce non-woody vegatable material in paper production.

The production of paper in Communist China in 1958 amounted to 1,230,000 tons, as against 1,040,000 tons according to the plan, and this was 310,000 tons or 35 per cent more than in 1957. The rate of increase of production in the paper industry in 1958 was twice the average annual increase rate during the first five-year plan. Further improvement in technological processes and more efficient utilization of equipment should make possible and even higher fulfilment of the plan.

At the end of the second five-year plan (1958-1962) the annual production of paper is hoped to reach 3,850,000 tons.

New paper plants are to come in operation during the current year with an annual production of 1,500,000 tons a year and it is proposed to spend some 700,000,000 yuans on these. Over the five years over 1,600 miniature to small paper mills are planned for, with an annual production capicity of from one to 100 tons of paper.

It is hoped the paper industry can be completely supplied with fiber from non-wood sources. During the first five-year plan the production of pulp from rushes developed rapidly; coated paper was produced entirely from rice straw; paper for cement bags from bamboo; and considerable quantities of pulp from wood waste. The potentialities of utilization of wood-substitutes in the Chinese paper industry are shown as follows (in thousand tons):

Kind of material	Annual resources in the main areas of the country	Amount of raw material which can be used for paper	Output of paper from this raw material
Rice straw	74,120	3,710	1 850
Wheat straw	30,530	2,500	1,250
Kaoliang stalks	18,260	920	460
Rushes	1,460	880	440
Sugar-cane waste	1,320	900	410
Bamboo	2,270	680	310
Soya bean stalks	5,620	590	300
Total	133,580	10,180	5.020

(source: Byulleten Tekhniko-ekonomicheskoi Informatsii, 1959(3)

*As opposed to handmade paper.

Continuous Cold Caustic Processing of Hardwood Chips

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The cold caustic treatment of hardwood chips to produce pulp is an accepted method for newsprint, corrugating medium, tissue and specialty papers. The cold soda system at present in use are the results of some 30 years of development. In the past ten years, the work conducted at the Forest Products Laboratory in Madison, Wis., has been instrumental in forwarding the development of cold soda pulping throughout the world (*1, 2, 3*).

There are several variations of the cold soda process in commercial use at the present time. Each uses chips and dilute caustic soda as the raw materials, and disk refining to produce the final pulp. The most popular process practiced in mills today is the original batch system using a two or three hour impregnation period at room temperature. The surplus liquor is drained from the chips, fortified, and used again in the next soaking operation. Generally the next step in the batch process is the pressing of liquor from the chips and pre-refining them in a screw press.

The main purposes of the press are to recover concentrated caustic liquor, reduce power requirements for pulping, improve fiber quality, and reduce bleaching costs. For example, after a two hour soak with four per cent caustic solution, drained aspen chips at a consistency of 29 per cent contain two per cent active caustic. Pressing of the chips to a total solids consistency of 60 per cent results in the removal of 62 per cent of the active caustic; or, for a mill producing 50 bone dry tons of pulp per day, a savings of 4,500 pounds of caustic may be realized in 24 operating hours.

The other methods of impregnation used in mill operations in the United States are designed to decrease the time necessary for impregnation (*4, 5, 6, 7*). Pressure alone has been found to increase the rate of penetration as does pre-evacuation of chips followed by the application of pressure. Attempts have been made to improve pulp quality through greater uniformity of impregnation of the chips with screw presses, roller mills or a series of roller mills and soaking vessels (*8, 9*). A mill producing tissue from poplar employs roller mills and soaking vessels for impregnation equipment and reports 15 to 30 minutes is required for full penetration (*10*). In addition, variation in chip size and shape, which result in decreasing the time necessary for impregnation and more even distribution of the caustic throughout the wood, have been proposed.

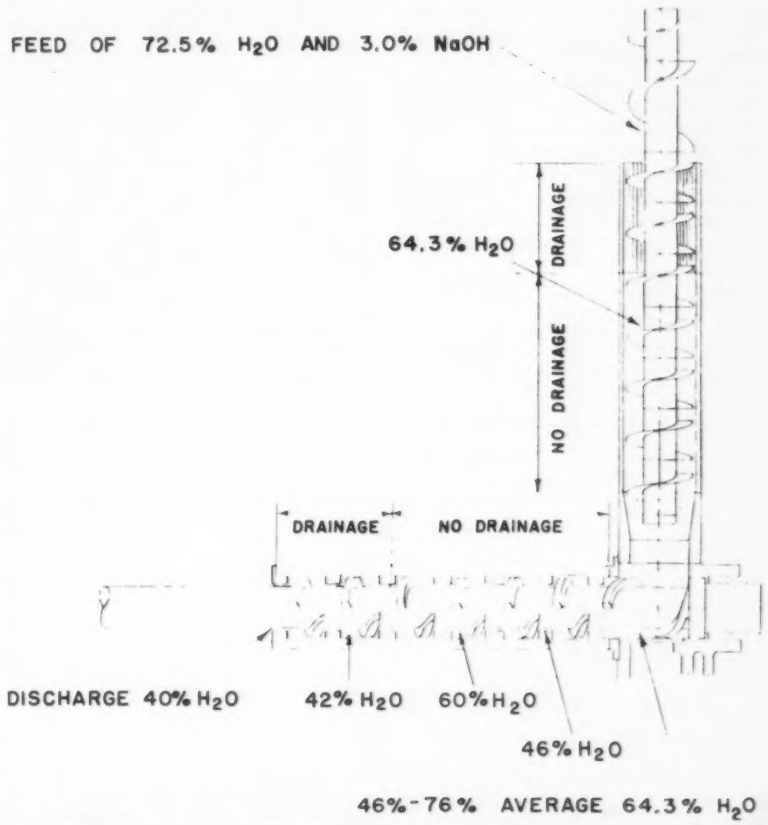

Figure 1: Section of Fiberpress barrels. Continuous cold soda pulping requires that no drainage of liquor be permitted for nearly one-half their length.

Special Press Developed

An extrapolation of the variation of impregnation with hydrostatic pressure indicates full penetration of wood chips is obtainable in less than 30 seconds at 1,000 to 2,000 p.s.i. (5). These pressures along with a mechanical fibrillation of wood chips can be achieved in our FiberPress which has been specifically designed for continuous cold soda processing.

In normal FiberPress operations, the goal is to remove the maximum practical amount of liquor from the chips. Consequently, the barrels of the press are provided with drainage throughout their entire length. On the other hand, the FiberPress employed in the continuous cold soda process is equipped with barrels that permit no drainage of the liquor for approximately one-half their length (Figure 1). Since the shaft design employed in the press results in alternate areas of high and low pressures, the liquor in high pressure sections not being allowed to drain from the barrel will flow to the low pressure sections of the barrel. As a consequence, liquor pressed from the chips in the high pressure sections flows to, and is thoroughly absorbed by, the chips in the low pressure sections. Further, the FiberPress shaft utilized in the continuous cold caustic press has a fibrillating action on the impregnated portion of the chips. Therefore, as the chips pass through the press, that portion which has been penetrated is removed from the main body of the chip continuously exposing new surfaces for impregnation.

Process Flow

In order to properly design the continuous cold soda system and to assure the correct amount of mechanical effort on the fiber, two FiberPresses in series are employed (Figure 2). Raw chips and black liquor are fed concurrently into a feeding trough which provides a mixing time of approximately five minutes, thence into the first FiberPress. The partially impregnated chips discharging from the first FiberPress are sprayed immediately with fresh caustic liquor. As this mass is conveyed to the second FiberPress, additional mixing time of approximately five minutes is again provided. In the second FiberPress final impregnation, fiberizing, and liquor removal are accomplished.

TABLE I

TYPICAL LIQUOR ANALYSES

Wood	Process	% NaOH in Liquor From Top of Vertical	% NaOH in Liquor From Transition Point	% NaOH in Liquor From Horizontal Discharge Sec.
Aspen	4% sol. 2 Hr. soak Single Stage	1.22	1.07	1.07
Aspen	4% sol. First Stage	1.73	0.92	0.58
Aspen	4% sol. Second Stage	1.44	1.20	1.20
Oak & Maple	6% sol. First Stage	4.80	2.86	2.76
	6% sol. Second Stage	5.60	4.54	4.04

TABLE II

BATCH AND CONTINUOUS PULPING YIELDS

Wood	Treatment	% NaOH Solution	Liquor To Solids Ratio	% NaOH Consumed Including Residual in Pulp Based on O. D. Wood	% Yield
Aspen	2 hour Batch	3.87	8.6	8.07	88.0
Aspen	2 Stage Cont.	0.99	8.6	3.70	90.7
Aspen	2 Stage Cont.	1.93	8.6	4.16	89.7
Aspen	2 Stage Cont.	3.88	8.6	14.1	88.0
Aspen	2 Stage Cont.	5.81	8.6	23.2	81.3
Aspen	2 Stage Cont.	9.60	8.6	30.7	71.9
Mixed	2 hour Batch	3.87	9.7	12.9	88.7
Mixed	2 Stage Cont.	0.97	9.7	1.94	95.5
Mixed	2 Stage Cont.	1.94	9.7	8.93	91.8
Mixed	2 Stage Cont.	3.87	9.7	11.4	88.0
Mixed	2 Stage Cont.	5.81	9.7	22.9	77.8
Mixed	2 Stage Cont.	9.68	9.7	25.5	73.7

The pulpy material issuing from the second press is at a consistency of approximately 55 per cent total solids and is ready for disc refining upon the addition of water. The liquor from the second press is used as the soaking liquor in the primary press. A portion of the liquor removed from the first press is fortified and reused as caustic liquor.

The use of such a system is possible through the digestion mechanism taking place at high pressure in the press. The digestion is illustrated by analyses of the liquors removed from the FiberPress at various points in the system. (Table I). The data obtained during the dewatering of aspen chips soaked for two hours represent the normal concentrations after the reaction is substantially completed. It will be noticed that during the continuous pulping system the caustic concentration of the liquor decreases markedly as the chips pass through the system. This is due to the sodium hydroxide reacting with the lignin in the wood.

A number of wood species have been pulped using the two-stage cold caustic system described above followed by a slight amount of disk re-

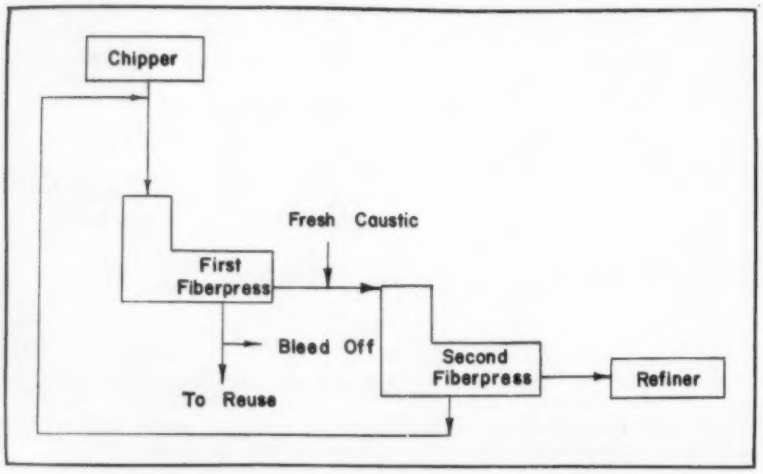

Figure 2: In the continuous system, two Fiberpresses connected in series are employed. This assures the correct amount of mechanical fiberizing to the chips.

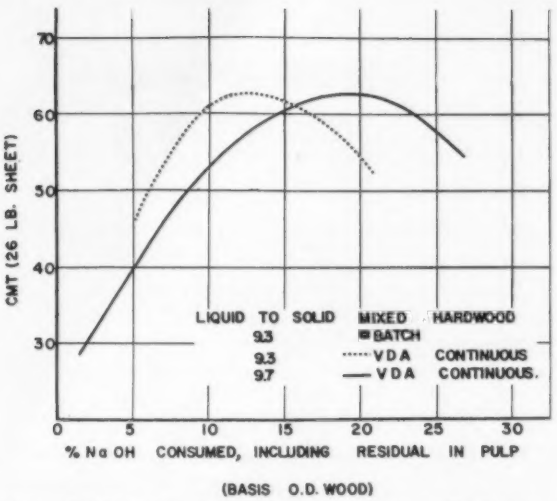

Figure 3: Variations in liquid to solids ratio will also vary caustic consumpton and therefore the strength properties of the sheet. (CMT for batch pulp, not shown, was approximately 51 units at 13 per cent consumption).

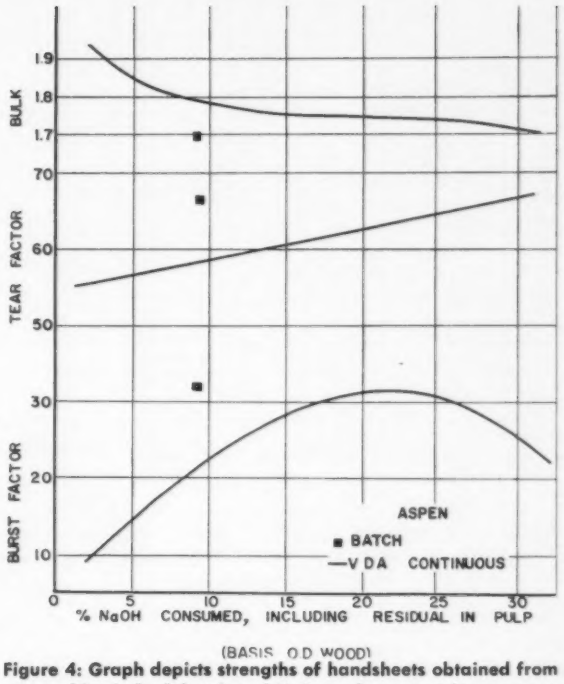

Figure 4: Graph depicts strengths of handsheets obtained from aspen chips in both batch and V. D. Anderson continuous processes.

fining to break up the FiberPress cake slightly before beating in a 1½ lb. Valley lab. beater. The woods pulped in this system include aspen, cottonwood, eucalyptus, oak and various hardwood mixtures containing birch, hickory, maple, oak, etc. While aspen produces pulps of high strength in all cold caustic systems and has great value as a raw material for development purposes, at the present time there appears to be more interest in applying the process to various mixtures of hardwood.

Varying Pulp Properties

The caustic consumption, and therefore pulp properties, are varied by simply altering the caustic concentration in the fresh liquor while maintaining a constant liquid to solids ratio for each type of wood. Variations in liquid to solid ratios alone will also vary the caustic consumption and therefore the strength properties of the pulp (Table II, Figure 3). Since at any one liquor to solids ratio the quality of any of the pulps is a function of the caustic consumed, pulp quality can be readily controlled by metering liquid flow rates. The quantity of pulp and liquor in the system at any one time is low, which makes the results of alterations in the operation readily observable. Because of the high pressures available and used in the FiberPress, pulps of acceptable quality are produced with a minimum impregnation time. The inherent simple design of the system results in low cost installation and operation having a minimum of material handling. The system is ideal for closed-vapor and dust-tight type construction, eliminating contamination of the product. Due to the ease and simplicity of operation, the labor requirement for the pulp mill is estimated at only 2 men per shift.

The data presented in Tables II and III, and Figures 3 through 6 represent the yields and handsheet strengths obtained using mixed hardwoods and aspen chips in both the batch and V. D. Anderson continuous processes. It will be noted that the range of caustic consumption studied herein is much greater than that usually reported. While it is recognized that at the present time the economics of any cold caustic system necessitate the use of only about 10 per cent caustic based on the O.D. wood, it is felt that economic conditions may change to greatly alter this situation. Higher strengths, such as those reported, or black liquor recovery may result in a re-evaluation of the economic status of cold caustic systems.

Bleaching

It will be observed that the data herein reported in the lower caustic consumption ranges are in good agreement with data reported by previous authors *(1, 2, 3, 7)*. The continuous system produces a superior or equal pulp to that obtained from the batch system for most hardwoods and hardwood mixtures

TABLE III

LABORATORY BLEACHING TESTS[1]

Pulp		% NaOH consumed including residual in wood (Basis O.D. Wood)	Unbleached GE Brightness	Bleached[2] GEBrightness
Aspen	Batch	8.07	41.7	59.6
	Continuous	3.70	27.6	61.9
	Continuous	14.1	38.6	61.7
Mixed Hardwoods	Batch	12.9	38.8	59.9
	Continuous	8.93	34.5	56.1
	Continuous	22.9	36.3	60.8

(1) Virginia Smelting Company
Technical Service Department
West Norfolk, Virginia

(2) With H_2SO_4, wash, 3% Na_2O_2 stage, 0.5% $Na_2P_3O_{10}$ treatment, 1.0% ZnS_2O_4 stage.

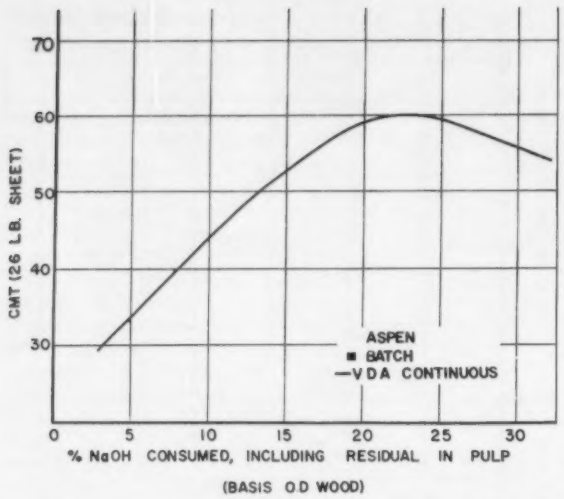

Figure 5: Cross-machine tensile of aspen handsheets as influenced by the amount of caustic consumption. Batch pulp showed a CMT of 58 at 9 per cent consumption.

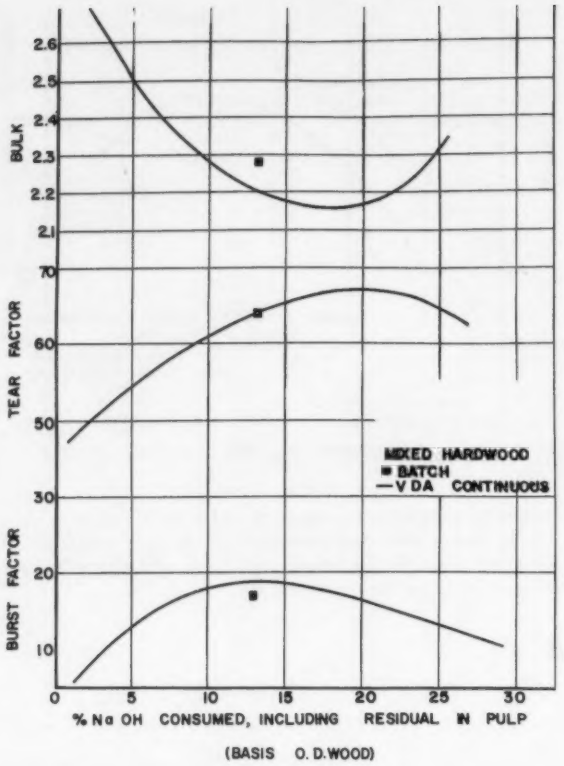

Figure 6: The continuous system produces a superior or equal pulp to that obtained from the batch system for most hardwoods.

as exemplified by the data on mixed hardwoods. In agreement with previously reported data *(9)* aspen processed by continuous systems is not equal to that obtained from the batch system. Generally the brightness and bleachability of the pulp produced by each system appear to be equivalent from the preliminary laboratory tests performed (Table III). The same is true of opacity although there are indications that the continuous system produces a more opaque handsheet than the batch system.

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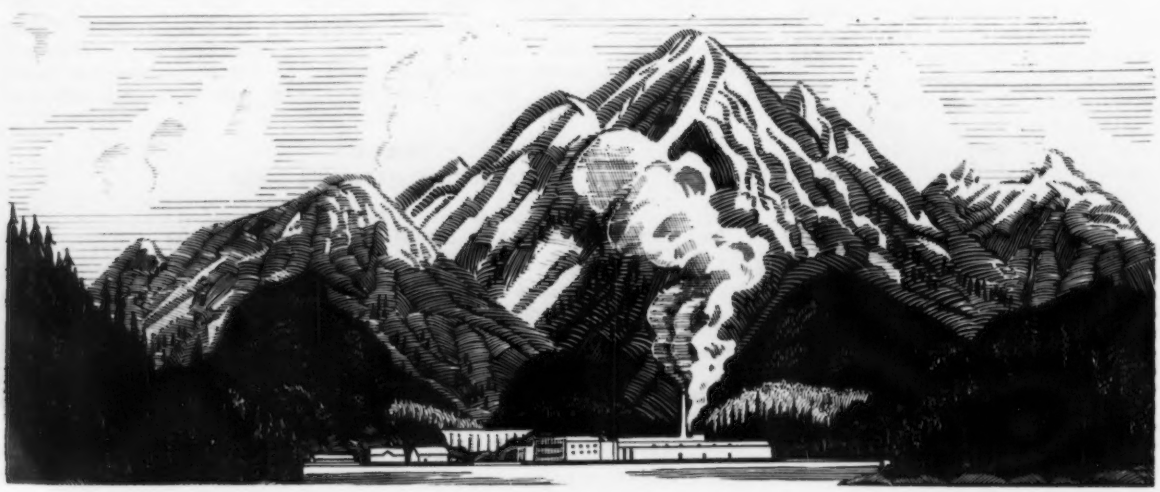
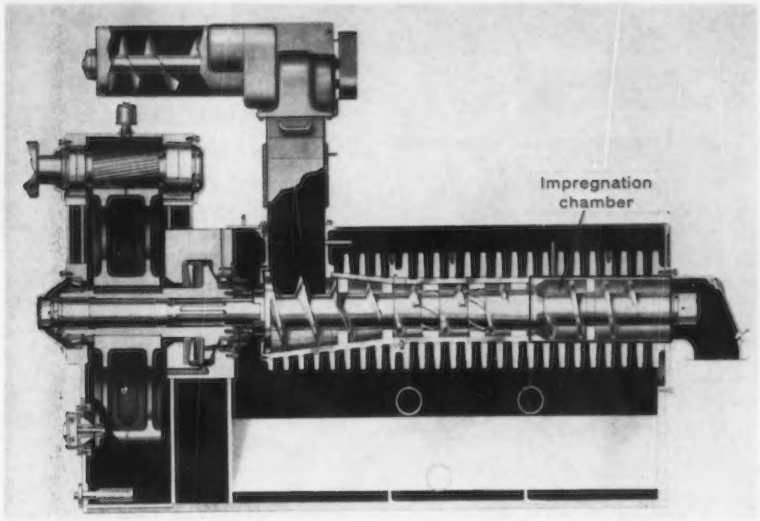


PJT NEW EQUIPMENT & SUPPLIES



Screw Press Speeds Up Chip Impregnation

The Bauer No. 567 Impressafiner providing continuous pressurized impregnation of wood chips and other cellulosic materials and greatly reducing the time needed for impregnation, has been developed by The Bauer Bros. Co., 1758 Sheridan Ave., Springfield, Ohio.

Where an hour or more was formerly required for the cooking or soaking of wood chips in certain processes in the pulp or board industries, impregnation can now be accomplished in a matter of seconds with the Impressafiner, according to Bauer development engineers.

In addition to impregnating wood chips with cooking liquors, the unit can also be used for precise addition of bleaches and other chemicals, and for the restoration of moisture to sawdust, overly dried chips, hogged scrap lumber and similar materials.

The screw press action of the Impressafiner softens fiber bonds and thus separates fiber bundles without breaking or shortening the length of individual fibers. This exposes more fiber surface and facilitates impregnation. Longer fiber length also aids in the production of stronger, more uniform paper or board.

As chips are conveyed by the screw assembly, air and moisture are gradually removed by compression. This makes the fiber bundles hygroscopic so that impregnation will be fast and uniform. When the material enters the impregnation chamber it is suddenly allowed to expand in the presence of the liquid processing chemicals which are being injected at low pressure in the desired quantity into that section of the unit. As the material expands, the voids in the mass are uniformly filled.

Daily capacity of the unit is rated at between 50 and 75 tons per day, depending upon operating conditions and the material being processed. The Impressafiner is a special modification of the Pressafiner, a high pressure screw press patented by Bauer for the removal of liquids and expression of moisture.

Slimicide Functions Continuously in W.W.

The application of C2, a sodium chlorite product, to control slime in paper mills has proven successful, it was announced by the Olin Mathieson Chemical Corp.

Test results—obtained in cooperation with several paper manufacturers through carefully controlled programs of laboratory testing, pilot tests in single machines and full scale use—indicate that this product is one of the most effective slime killers available for acidic white water systems. Its slimicidal action is based upon the slow release of chlorine dioxide which is generated continuously throughout the entire white water system.

This maintained action is a distinct advantage over slimicides which function only near the point of application, O-M added. In addition, C2 causes no foaming at the head box or darkening of the pulp and, at the recommended use level, has caused no detrimental effects on dyes. Further information on application, storage and handling of the slimicide is available from the Market Development Dept., Chemicals Div., Olin Mathieson Chemical Corp., Baltimore 3, Md.

Pedestal Crane Pinpoints Loads

A pedestal-mounted electric crane, suitable for a wide range of industrial applications, can pinpoint load positioning to within .008 of an inch or less, says R. G. LeTourneau, Inc.

The unit which has a minimum capacity of six tons and requires as little as 5 sq. ft. for installation, is said to effectively serve more than 2,150 sq. ft. of floor area.

Work functions of hoisting, luffing and swinging are each powered by individual a.c. electric gearmotors, operated separately or simultaneously from a small remote control box which permits the operator to choose any vantage point. Electro-magnetically controlled spring-loaded disc

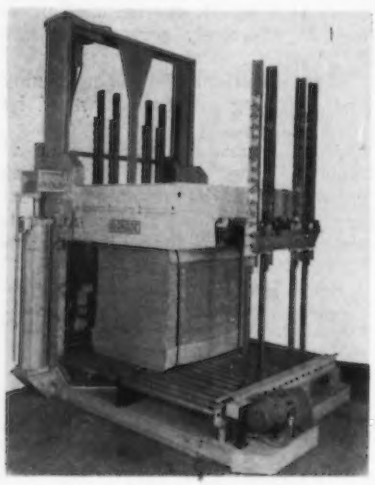
brakes, incorporated in each gearmotor, release when the motor control switch is pressed, and engage when the switch is released.

Maximum safety is provided by powered down-travel with "no-wear" braking, which prevents overspeeding. Also, should electrical power failure occur, the gearmotor disc brakes prevent "free falls." Limit switches in the gearmotor power circuits prevent overtravel of any operating component. Operator responsibility is thus reduced.

Optionals include d.c. powered swing with an accompanying motor-generator set, corrosive atmosphere protection of electrical components, and base plate or column mounting. For additional information write to R. G. LeTourneau, Inc., 2399 South MacArthur, Longview, Tex.

Compression Strapping Fully Automatic

The CSM compression strapping machines simplify, automate, and speed-up steel strapping operations to produce significant cost reductions for users, announces Signode Steel

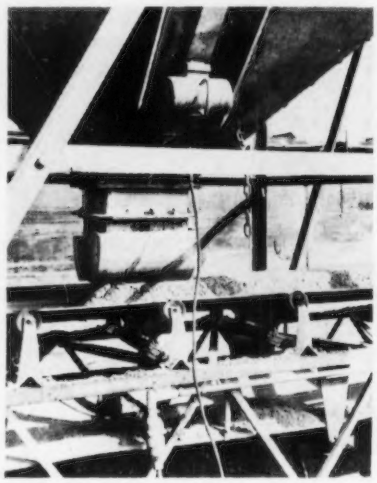


Strapping Co. Loads are compressed; strapping is fed, tensioned, and sealed automatically, and in seconds. It was emphasized that one operator at a central station can turn out compact bales so quickly and efficiently that this can become a part of regular production. The finished bale stacks easily, and occupies less space in shipment and in storage.

These compression strapping machines are available with platen pressures from 6,000 to 16,000 pounds. The choice of pneumatic or hydraulic systems are available. For further information write Signode Steel Strapping Co., 2600 North Western Ave., Chicago 47, Ill.

Water and Dust-Tight Electric Vibrators

Application of Cleveland Vibrator's RC line demonstrates the ability to move stubborn materials from outdoor bins, regardless of weather,



from hoppers to conveyor belt in an accurately measured stream. The water and dust-tight construction of the unit precludes any possibility of failure due to constant exposure, state company spokesmen.

RC model vibrators generate a penetrating vibratory action. They employ the rotating eccentric shaft principle of developing vibration, but are self-contained with no pulleys or belts. They are totally enclosed, with a built-in, a.c. motor and eccentrics.

The RC line is available in 3-phase, a.c. current in all common voltages. Working frequency is 3600 impulses per minute—corresponding to 60 cycles per second. Furnished completely equipped, ready to install. Cleveland Vibrator Co., Cleveland 13, Ohio.

Spreaders Handle Paper Mill Sludge

Extra steep sloping sides (about 60°) and formed contour of the New Leader L-72S Spreader facilitates handling of paper mill sludge. In addition, the equipment features later-

ally reinforced endgates. A heavy, high carbon steel drive shaft in the conveyor gear case turns the wide 30-inch conveyor chain. Large 20-inch spinners distributes material.

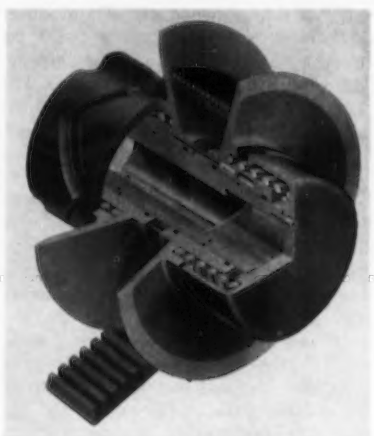
The spreader is available in four different body lengths from 9-feet to 15-feet with respective capacities from 5.2 to 8.8 cubic yards.

Additional information is available from Highway Equipment Co., Dept. P-3, 616 "D" Avenue, N.W., Cedar Rapids, Iowa.

Sheave Holds Constant For Varying Torque Loads

Wood's "MCS" variable-speed sheave cam pressure is exerted only when the load requires it. Power is transmitted equally to both movable flanges torsionally resilient rubber cam followers. The sidewall pressure on the belt varies in proportion to the torque required to carry the load. Thus, the pitch diameter is maintained and the driven speed kept constant regardless of the torque condition. Belt life is prolonged because the flanges are not continually being squeezed against the belt by heavy thrust springs.

The "MCS" incorporates a lubrication system that is said to eliminate fretting corrosion, freezing and sticking. There are no points of constant contact anywhere between the



flanges and sleeves to obstruct lubrication. The resilient cam followers allow continuous rotational oil pumping action of the flange hubs on the sleeves. With each revolution of the sheave, the oil film on the bearing surfaces is constantly renewed. O-ring seals retain the lubricant in an oil reservoir that requires checking only once or twice a year.

Both flanges move an equal distance to change the pitch diameter. Belt alignment is thus maintained

US ROLL COVERINGS

International Paper's newest mill has its No. 2 Beloit machine roll on U.S. Rubber roll coverings

First Top Press Roll	42" x 305"—50 P and J	Top Breaker Stack	42" x 305"—25 P and J
Second Top Press Roll	42" x 305"—40 P and J	Table Rolls	14½" x 304"—0·5 P and J (Balanced at 2,000 F.P.M.)

ALL HAVE U.S. RUBBER ROLL COVERINGS

Located in the Pine Bluff, Arkansas, mill of International Paper, this No. 2 Beloit machine turns out 475 tons of bleached kraft board *per day.*

"U.S." coverings are selected because of their performance on large, fast machines. These rolls have resilience, uniform hardness, smoothness of grain built into them. They give the right finish to pulp products, always "run clean" and do not pick up fibre.

"U.S." puts roll-covering specialists at your disposal to study your mill requirements at first hand, for both new rolls and re-covering. Get in touch with us at address below.

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during and after the speed change, and belt wear is accordingly minimized.

Two sizes are available. MCS-10-W, for motors of 7½ to 15 h.p., has a minimum pitch diameter of 5.0 inches, a maximum pitch diameter of 10.0 inches. MCS-12-W, for motors of 15 to 20 h.p., has a minimum pitch diameter of 6.0 inches, and maximum pitch diameter of 12.0 inches. Further information can be obtained from T. B. Wood's Sons Co., 1300 Fifth Ave., Chambersburg, Pa.

Control Unit for Charging Batteries

The MP-3 Exide Automatic Charge Control Unit is said to eliminate the danger of overcharging electric industrial truck batteries.

Designed to control both regular daily charges and weekly equalizing

charges, the MP-3 requires no attendance or resetting, regardless of the length of the normal charging time. Interconnected with the charging equipment, the charging process is initiated when the control indicator of the electric timing switch is dialed. When a battery on charge reaches 2.37 volts per cell at 77 degrees F., a TVR temperature-compensated voltage relay operates to reduce the charging rate and/or start the electric timer.

The MP-3 is designed to control modified constant potential battery charging. A control circuit also is provided in the unit to operate an external auxiliary relay when two-rate charging is used. Size of the MP-3 is 6¼ inches wide, 8⅛ inches high and 4⅛ inches deep. Units can be selected for batteries ranging from 6 to 60 cells. Exide Industrial Div., The Electric Storage Battery Co., Rising Sun and Adams Avenues, Phila. 20, Pa.

Three Paper Coating Resins Developed

Three polyethylene paper coating resins—displaying a marked improvement in adhesion and draw-down characteristics as well as a reduction in neck-in, smoking, coating temperatures and polymer build-up at the die—have been developed by U. S. Industrial Chemicals Co. The resins, which have been field tested and are now commercially available, are designated Petrothene 200-2, 201-2, and 203-2.

Considerable success has been met in extruding these polyethylene resins onto a variety of substrates—including paper, paperboard, foil, cellophane, and others, reports the company. The following chart briefly describes some basic resin properties and recommended applications:

Resin	Melt Index	Coating Weights #/sq. ft
200-2	3.0	20 /3,000
201-2	5.0	10-25/3,000
203-2	8.0	3-15/3,000

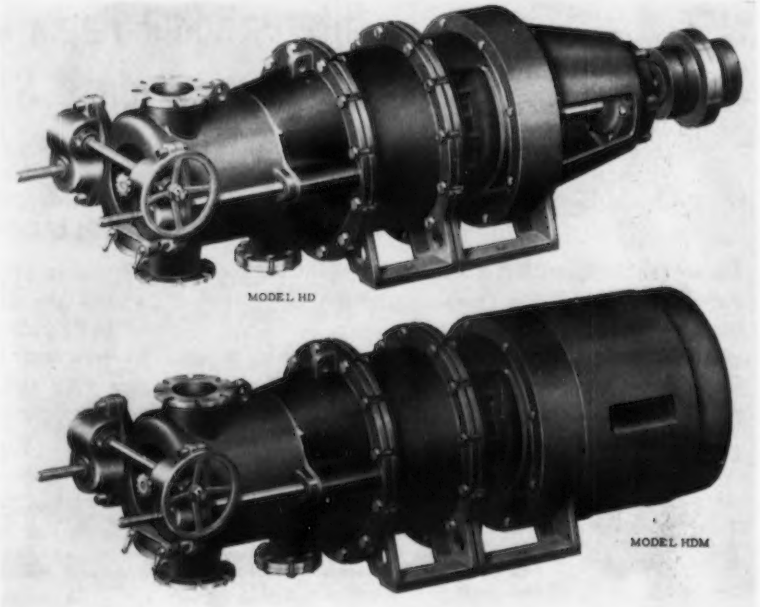
The resins each have a density of 0.915. Further details are presented in a technical data sheet which is available upon request to the company.

Jordan and Refiner Improved, Simplified

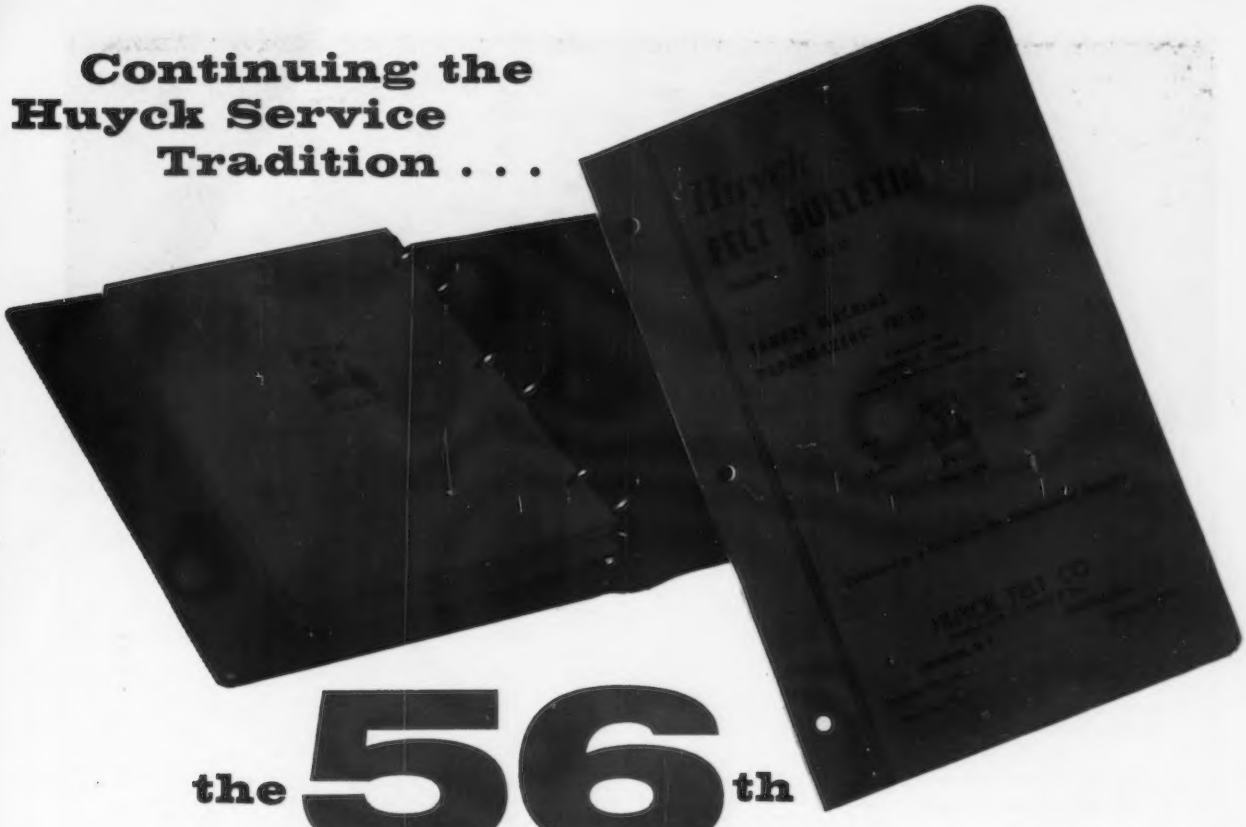
R. B. Honeyman, vice president of Morden Machines Co., Portland, Ore., announces the development of the HD and HDM "Stock-Maker" refiner and "Stuff-Maker" jordan.

Morden's engineering staff has improved and simplified their design to give a 20 per cent reduction in initial investment. The introduction of the two-piece rotor and shell filling has reduced the cost of replacement fillings. The redesigned "Stock-Maker" retains the same principles of reverse flow, sealed-pressure beating treatment. A simple filling change in the "Stock-Maker" converts it to a "Stuff-Maker" with standard jordan flow for cutting treatment. The unique feature of the integral motor arrangement is optional and reduces space requirements and maintenance problems. Mr. Honeyman reports that fillings may be changed in two hours or less and down time is at a minimum compared to most conical refiners. Fillings are precision-machined, thus eliminating the necessity of grinding-in; they are dynamically balanced to assure uniform wear. There is interchangeability of fillings between the new model and existing "Stock-Makers" in the field. Improved metallurgy has provided a more versatile selection of fillings for all types of treatment.

The "Stock-Makers" and "Stuff-Makers" will be available in two sizes. The No. 6 size employs a 150- to 200-h.p. motor and the No. 8 size has a 300 to 350-h.p. motor.



Continuing the Huyck Service Tradition . . .



the 56th

. . . in Huyck's series of FELT BULLETINS . . . the most complete, most concise reference library on the application of Papermakers' Felts

In addition to conducting Felt Workshops and Forums to supply general felt application information, Huyck has published for many years a series of detailed Felt Bulletins that keeps papermakers posted on "what's new" in the use and care of felts. This latest bulletin, the 56th in the series, presents questions and answers concerning practical problems connected with **Yankee Machine Papermakers' Felts** and continues the Huyck Service Tradition of providing operating information of current interest for better felt performance.

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Figures of the Week

PAPER PRODUCTION RATIO REPORT—American Paper & Pulp Assn. Figures

(Production as per cent of normal capacity)

COMPARATIVE WEEKLY SUMMARIES

	Aug. 8	Aug. 15	Aug. 22	Aug. 29	Sept. 5
1959	95.7r	96.5	96.4r	95.5r	95.2
	Aug. 9	Aug. 16	Aug. 23	Aug. 30	Sept. 6
1958	89.3	91.0	90.0	88.1	69.4

r Revised.

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1959	87.8	90.5	93.2	94.4	95.3‡	95.6‡	84.6‡	95.9‡	—	—	—	—	—
1958	86.9	89.5	89.5	88.4	87.2	87.2	75.3	89.6	86.5	91.6	90.4	83.1	87.1

‡ Preliminary.

COMPARATIVE YEARLY SUMMARIES

	1952	1953	1954	1955	1956	1957	1958	1959
Year to Date	90.5	92.9	91.2	94.4	98.4	91.2	85.4	92.1
Year Average	88.6	92.3	91.6	94.0	97.9	90.9	87.1	—

All of the above data is based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available.

PAPERBOARD OPERATING RATIOS†—National Paperboard Assn. Figures

COMPARATIVE WEEKLY SUMMARIES

	Aug. 8	Aug. 15	Aug. 22	Aug. 29	Sept. 5
1959	98	96	95	96	97
	Aug. 9	Aug. 16	Aug. 23	Aug. 30	Sept. 6
1958	92	93	92	95	73

COMPARATIVE MONTHLY SUMMARIES

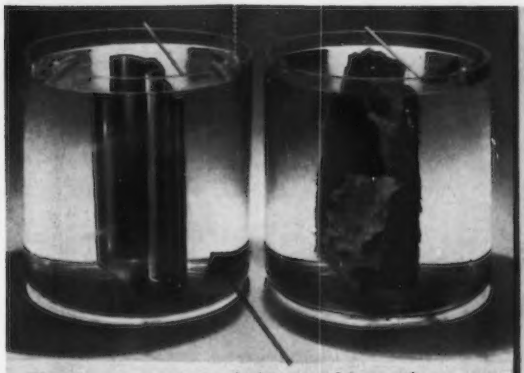
Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1959	86	89	94	93	95	95	83	96	—	—	—	—	—
1958	84	86	87	84	85	86	76	93	90	95	93	77	86

† *Per cents of operation based on "inch-hours" reported on a 6-day basis to the National Paperboard Association.*

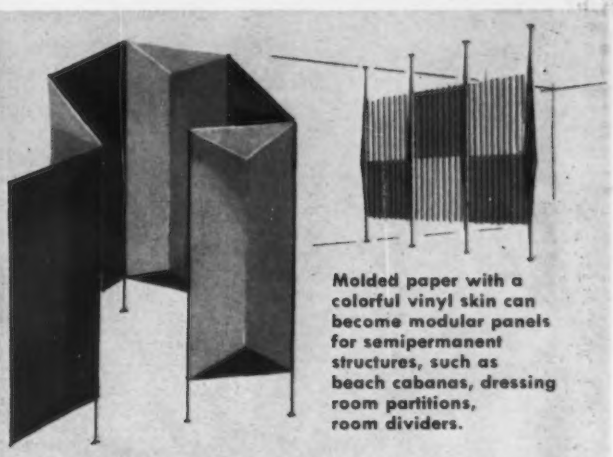
SUMMARY OF PAPERBOARD STATISTICS—National Paperboard Assn. Figures

ITEM	THIS WEEK ENDING Sept. 5, 1959	LAST WEEK ENDING Aug. 29, 1959	CUMULATIVE TO DATE Jan. 1 to Sept. 5, 1959 incl.
% Activity	97%	96%	92%
TOTAL	335,940	323,961	10,814,832
Liner	116,331	118,944	3,750,889
Corrugating Material	51,525	48,330	1,641,977
Chip & Filler Board	4,788	4,475	179,292
Total Containerboard	172,644	171,749	5,572,158
Folding	61,058	57,884	1,957,422
Set-Up	12,359	12,685	407,870
Special Food Board	29,236	28,247	987,967
Other	60,643	53,396	1,880,415
Total Boxboard	163,296	152,212	5,242,674
Total Orders			
Received	374,535	309,620	
Unfilled End of Week	550,083	507,415	

A NEW WAY TO UPGRADE YOUR PRODUCTS: VINYL COATINGS



The transparent vinyl skin on this section of a pulp-molded shipping tray makes it impervious to water.



Molded paper with a colorful vinyl skin can become modular panels for semipermanent structures, such as beach cabanas, dressing room partitions, room dividers.

Weatherproof covered pallets of paper pulp can withstand weather—could multiply warehouse space.

Vinyl-coated pulp-molded covers can make shipping containers that permit flat car shipping, and outside storage.

Colorful, leather-y coatings for molded paper

Vinyl coatings can help you develop new products made of molded paper with its attendant advantages of low-cost tooling. You can turn molded paper pulp into an altogether new material with a single spray or dip coating.

The vinyl dispersion transforms molded paper pulp into a smooth, brightly colored weatherproof, waterproof material. A "skin" up to 60 mils thick can be put over a molded paper product and heat-cured quickly into a permanent, abrasion resistant, leathery-tough film.

You can make the coating soft and rubbery or as hard as a tire casing. The vinyl coating can be glossy, satin-y, or dull; the characteristics of the skin, like the choice of color, are determined by the formulation of the dispersion.

Write for sources of vinyl in liquid form for coating paper—or sheet metal, glass, or products of wire or expanded steel. You can open new markets with new products.

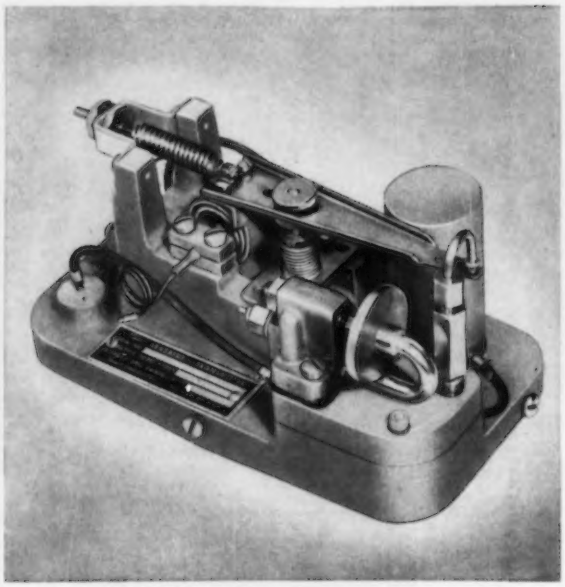
Organic Chemicals Division
MONSANTO CHEMICAL COMPANY
Dept. SP-6, St. Louis 66, Missouri

Monsanto manufactures a wide variety of plasticizers and Opalon® resins for formulators of these high-quality vinyl dispersions.

Monsanto®

Where Creative Chemistry Works Wonders for You

LOW COST AND EASE OF INSTALLATION PERMIT WIDE USAGE.



OPERATIONAL SIMPLICITY IN A RUGGED, COMPACT UNIT.

FULLY FIELD PROVEN, LOW-COST TEMPERATURE TRANSMISSION

Taylor SENSAIRE* Transmitter ideal for Stock Preparation and Bleach Plant, Digester, Grinder—wherever remote temperature transmission required.

This sturdy, compact temperature transmitter operates within limits of minus 30°F. to plus 1200°F. Force-balance, with mercury-filled system, it has simplified adjustments and excellent repeatability. It is self-compensating for ambient temperatures.

Individual transmitters are factory calibrated in one of four available range spans. A simple thumb-screw adjustment zero-sets the instrument within wide limits. This adjustment is accomplished with high accuracy, and no further calibration is necessary. Factory calibrated accuracy is well within 1% of rated range, below 550°F; 1½ % above 550°F.

All SENSAIRE transmitters and components are interchangeable (regardless of range). A measuring system encompassing a new range span or new range limits (other than those obtainable with zero adjustment) may be added in the field.

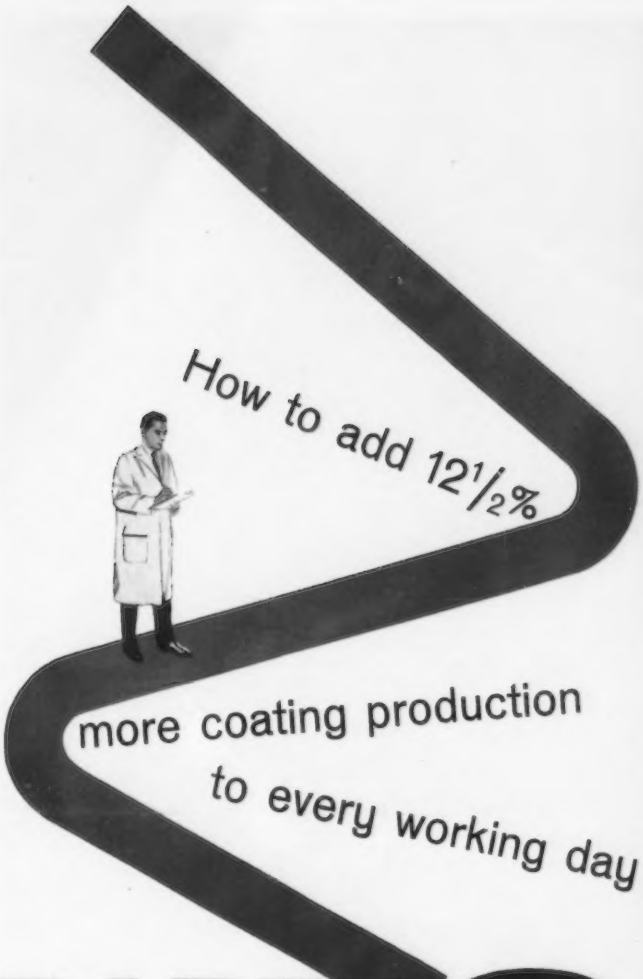
Write for SENSAIRE **Bulletin 98293,** Taylor Instrument Companies, Rochester 1, N. Y., or Toronto, Ontario.

*Trade-Mark

Taylor Instruments
MEAN ACCURACY FIRST

Unusually Fast Response. Due in part to its extremely small bulb, the SENSAIRE transmitter has an unusually fast speed of response. However, for processes that require it, the SPEED-ACT* (derivative response adjustment) unit is available. The SPEED-ACT feature is of special value where the bulb is placed in a well, or in processes using material with poor thermal transmission rates.

Easy to Install. Mounts in any position. Universal bracket provides for direct mounting on pipe, wall, or wrench head of well or separable bushing. Small and extremely compact, the SENSAIRE transmitter measures only 7¾″ x 4¾″ x 4½″; weighs only 7 lbs.



DAREX LATEX C

If paper-coating latices "look alike" to you, have a closer look at DAREX LATEX C . . . the *controlled rheology* latex.

Here are the facts: DAREX LATEX C lends an astonishing new smoothness and brightness to paper coatings, thanks to the rheological control it provides over the viscosity and pattern of the color.

But this new latex binding agent does more. With DAREX LATEX C you can increase the solids content of the coating. A five percent increase in solids allows you a 12½ percent reduction in water content . . . and cuts drying time by the same amount. *This can mean up to 12½ percent faster coating production* . . . 12½ percent more production in a day . . . *every working day!*

For a closer look at this remarkable new product, send for a descriptive brochure. Write to us, attention Organic Chemical Sales.

W. R. GRACE & CO.
DEWEY AND ALMY CHEMICAL DIVISION
Cambridge 40, Mass.

COATING A—Made with ordinary latex. Irregular pattern, poor surface, paper fiber visible in coating voids.
COATING B—Made with ordinary latex. High, uneven pattern means poor receptivity to ink, erratic coverage.
COATING C—Made with DAREX LATEX C, this coating has smooth, uniform, low-pattern surface.
HERE'S THE AMAZING DIFFERENCE
These calendered coatings . . . enlarged 80 times . . . are identical in formulation except for the latex. Only Coating C, with DAREX LATEX C, has a smooth, uniform, low-pattern surface.

Diamond "Flow-through" chlorination cell
Diamond "Probe" chlorination cell

New "brain cells" for precision chlorination control

Here's another exciting new development from Diamond's customer-service research. These low-cost chlorination cells are rugged, precise, completely dependable... give you a simple means of measuring oxidation potential to control chlorine reaction in vessels or sample lines.

No other chlorination cell combines these advantages:

1. Both electrodes are in a single body.
2. Resists virtually every condition encountered in paper mills and other applications of oxidation-potential principle... including high pressures and temperatures up to 200° F.
3. Lowers routine maintenance.
4. Reduces down time of automatic control system.
5. Eliminates bridging between electrodes by fibers.
6. Eliminates need for diluting stock or for separate sampling line.

The skill of the Diamond technicians who developed this chlorination cell, the facilities of the Diamond Pulp and Paper Laboratory and thirty years of manufacturing and shipping experience of the world's largest makers of CHLORINE and CAUSTIC SODA make Diamond your logical supplier for CHLORINE and CAUSTIC SODA. Call your nearby Diamond Sales Office or write . . . DIAMOND ALKALI COMPANY, 300 Union Commerce Bldg., Cleveland 14, Ohio.

Diamond Chemicals

A New Filling Combination *that will* SAVE MONEY IN YOUR MILL

ED Jones

Adapta-Plug

and FULBAR SHELL FILLINGS

Adapta-Plug - a revolutionary advance, this is strongest plug design developed; completely bandless; easiest to strip and fill. Patented

Fulbar Shell Fillings - rigid, one-piece, with no keys or wedges, saves hours of installation time. Famous Nowave design. Made to fit shell of any Jordan.

Our Sales Engineers Can Furnish Proof

Ask your Jones representative or write for Bulletin EDJ-1094

E. D. JONES CORPORATION

Pittsfield, Mass.

BUILDERS OF QUALITY STOCK PREPARATION MACHINERY

In Canada:
The Alexander Fleck, Ltd., Ottawa

Prices of Fibers

MARKET WOOD PULP

THIRD QUARTER CONTRACT PRICES PER SHORT AIR-DRY TON

Delivered Basis

	U.S.	Canadian	Swedish	Finnish	Norwegian
Groundwood	$ 82.50/ 90.00	$ 82.50/ 90.00	§90.00/ —	§80.00/ —	§80.00/ —
Bleached Gw'd	$ 97.50/100.00	$ 97.50/100.00			
Kraft, Blchd.	157.00/ —	160.00/162.50	§157.00/162.50*		§157.50/ —
Kraft, Blchd. Hdwd.	152.00/ —		§137.00/ —		
Kraft, Semi-bleached.	140.00/ —	140.00/ —			
Kraft, Unbl.	117.50/125.00	125.00/130.00	†125.00/130.00	125.00/ —	
Sulphite, Blchd.	155.00/ —	155.00/ —	*155.00/ —	*155.00/ —	155.00/ —
Sulphite, Bl. Hdwd.	150.00/ —				
Sulphite, Unblchd	135.00/ —	135.00/ —	†135.00/ —	*135.00/ —	
Sulphite, Unb'l. Gl'sn		140.00/ —	†134.00/ —		
Soda, Blchd.	147.00/150.00	150.00/ —			

§ On Dock Atlantic Ports. * Freight allowed. † Varying Freight Allowances

COTTON LINTERS

F.O.B. OIL MILLS
WEEK ENDED SEPTEMBER 8

	Atlanta	Memphis	Dallas	Los Angeles
Grade 1	$8.75/8.50	n.a.	n.a.	n.a.
2	8.50/7.50	n.a.	n.a.	7.50
3	7.50/6.00	$7.50/7.00	6.75/6.50	7.00
4	6.00/5.25	6.25/5.75	6.25/5.25	6.50/6.25
5	5.25/4.75	5.25/4.75	4.75/4.50	5.75
6	4.75/3.50	4.50/4.25	4.00/3.25	3.50
7	3.50/2.50	4.00/3.00	3.00/2.75	3.00/2.50

WASTE PAPER MARKET

Mill Prices, f.o.b. Trucks Shipping Point — Includes Brokerage

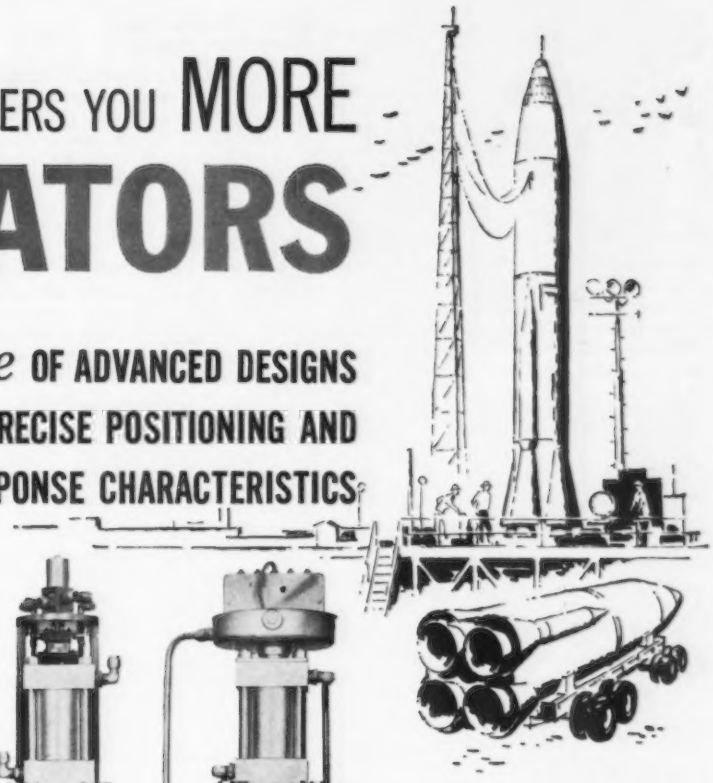
These quotations are a partial indication of the price range on volume tonnage in each market on the date specified, as gathered from major dealers and brokers. SPECIAL PACKINGS AND SPOT TONNAGE NOT INCLUDED. Prices nominal.

	New York	Boston	Chicago	Los Angeles
	Sept. 15	Sept. 15	Sept.	Sept.
No. 1 Mixed Paper	$ 10.00/ 12.00	12.00/ 14.00	9.00/ —	15.00/ —
No. 1 News	17.00/ 18.00	17.00/ 18.00	16.00/ —	17.00/ —
Overissue News (Lg. size)	16.00/ 18.00	15.00/ 17.00	21.00/ —	20.00/ —
Mill Wrappers	19.00/ 22.00	13.00/ 15.00	14.00/ —	15.00/ —
Old Corrugated Containers	24.00/ 25.00	23.50/ 24.00	23.00/ —	23.00/ —
Super Assorted Kraft Paper	35.00/ 40.00	— / —	35.00/ —	55.00/ —
New Double Kr. Ld. Corr. Cuts	35.00/ 37.50	37.50/ —	37.50/ —	35.00/ —
(Semi-chem. medium)	47.50/ —	47.50/ —	45.00/ —	36.00/ —
New 100% Kraft Corr. Cuts	40.00/ 42.50	— / —	57.50/ —	— / —
New Br. Kraft, Env. Cuts	70.00/ 75.00	70.00/ 75.00	52.50/ —	55.00/ —
New Br. Kr. Bag Waste Prntd.	55.00/ 60.00	55.00/ 60.00	52.50/ —	55.00/ —
New Br. Kr. Bag Waste Unprintd	60.00/ 65.00	65.00/ 75.00	60.00/ —	60.00/ —
No. 1 Groundwood Shvs.	25.00/ 30.00	25.00/ 30.00	24.00/ —	35.00/ —
White Newsblanks	65.00/ 70.00	53.50/ 60.00	45.00/ —	60.00/ —
No. 1 Soft White Shvs.	60.00/ 65.00	60.00/ 65.00	60.00/ —	70.00/ —
Super Soft White Shvs.	65.00/ 75.00	75.00/ 85.00	70.00/ —	— / —
Hd. White Shvs.	85.00/ 90.00	90.00/100.00	85.00/ —	95.00/ —
Hd. White Env. Cuts	100.00/105.00	105.00/110.00	90.00/ —	113.00/ —
Col. Tab. Cards	55.00/ 57.50	55.00/ 57.50	52.50/ —	45.00/ —
Manila Tab. Cards	77.50/ 80.00	77.50/ 80.00	75.00/ —	80.00/ —
No. 1 Col. Ledger	40.00/ 45.00	37.50/ 42.50	47.50/ —	35.00/ —
White Ledger	60.00/ 62.50	60.00/ 65.00	57.50/ —	55.00/ —
Mixed Book & Mag.†	25.00/ 28.00	— / —	17.00/ —	— / —
No. 1 Books‡	27.50/ 30.00	21.50/ 23.50	35.00/ —	17.50/ 19.50

♦ Includes Time & Life; no coarse groundwood. ‡ Not to exceed 10% of groundwood.

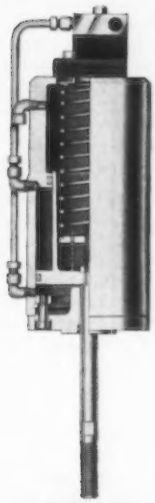
Annin OFFERS YOU MORE IN ACTUATORS

Your choice OF ADVANCED DESIGNS WITH MORE PRECISE POSITIONING AND DYNAMIC RESPONSE CHARACTERISTICS



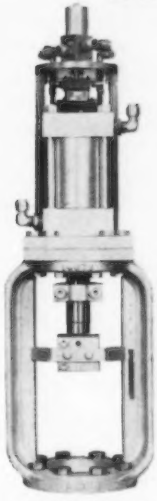
1542 & 1544 SERIES DOMOTOR POWERED ACTUATORS

Two types, "Direct Thrust" (illustrated) or "Lever" units are available for any application requiring accurate positioning in response to a pneumatic signal, such as butterfly valves, dampers, turbines and engine governors. Guaranteed positioning accuracy of better than 0.001" per inch of stroke over the complete range of piston travel is combined with a smooth operating action that provides an accurate, stable output force.



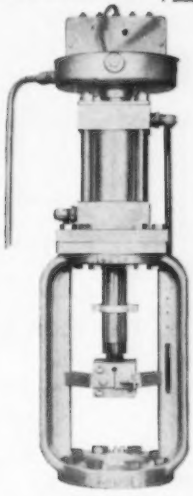
600 SERIES STROKE POSITIONING ACTUATORS

Offered primarily for the control of variable speed drives, rheostats, pumps and cams, as well as control valves, with strokes up to 6 inches and forces up to 2510 pounds of thrust. Compact and rugged, for easy mounting on existing equipment. May be operated from a standard 3-15 psi instrument signal, with a positional accuracy within 0.001" per inch of stroke.



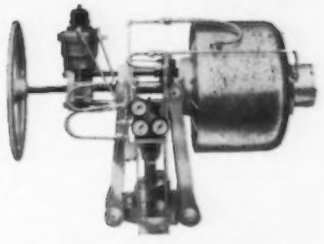
10,000 SERIES PNEUMATIC-HYDRAULIC ACTUATORS

For valves requiring strokes to 6 inches and thrusts to 100,000 lbs. Furnished on body assemblies where process conditions require very fine valve response, hi-speed and stability. Operate on 1500 psi oil supply system from any common instrument air signal.



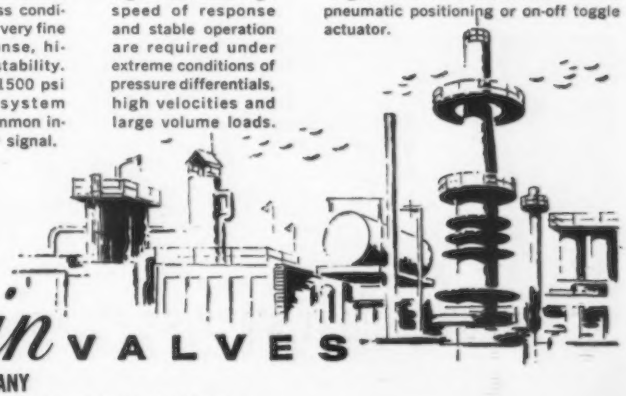
20,000 SERIES ELECTRO-HYDRAULIC ACTUATORS

Provide a means of converting an electrical signal to a powerful hydraulic positioning force, where high speed of response and stable operation are required under extreme conditions of pressure differentials, high velocities and large volume loads.



TOGGLE ACTUATORS

For process requirements where the unbalanced forces are extremely high, or where large through-puts are required. Three types are offered: pneumatic positioning, pneumatic on-off, and manual control, all embodying the toggle actuator; or a manual control arrangement can be combined with the pneumatic positioning or on-off toggle actuator.



Annin VALVES

Write for Bulletin 1236-ST

THE ANNIN COMPANY
1040 S. Vail Avenue, Montebello, California

PJT NEW LITERATURE

Control of Water Problems

Covers corrosion, scale formation and slime and algae growths in air conditioning systems and offers concrete suggestions for their control through adequate, planned chemical treatment. Also includes application information as well as control testing data. Bulletin 596. Betz Laboratories, Inc., Gillingham & Worth Sts., Philadelphia 24, Pa.

Cat No. 14 Motor Grader

Features turbocharged 150-h.p., oil clutch, dry-type air cleaner, split side-shift rack, heavy-duty circle and moldboard and a complete line of attachments. Form 33456. Caterpillar Tractor Co., Peoria, Ill.

Electro-Clutches

Provides design, specification and application material, including photographs, drawings and sketches of electromagnetic clutches, in six series with torque capacities from 1.8 through 13,000 pound-feet. Bulletin 6304-1B. I-T-E Circuit Breaker Co. 1900 Hamilton St., Philadelphia 30, Pa.

Electric Motors and Generators . . . A.C. and D.C.

Contains illustrated sales copy on squirrel-cage a.c. motors, special purpose motors, wound-rotor motors, direct current motors, generators and motor-generator sets. 6p Bulletin. Imperial Electric Co., 84 Ira Ave., Akron 9, Ohio.

How to Save Time and Money

Shows where to use Markal Paintstik markers for identification purposes. Leaflet. Markal Co., 3052 W. Carroll Ave., Chicago 12, Ill.

Layne Propeller and Mixed Flow Pumps

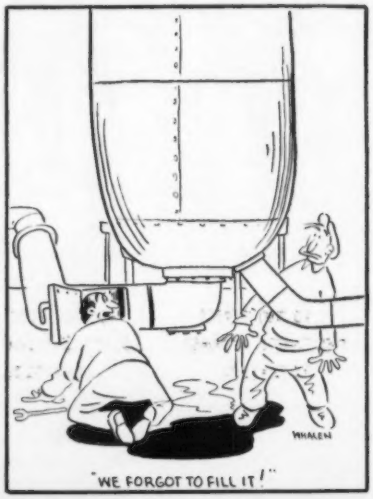
Includes cutaway drawings, installation sketches and measurements, delivery and performance tables, plus complete information on all uses and applications of these pumps. Bulletin 350. Layne & Bowler, Inc., Memphis 8, Tenn.

Permutit Demineralizers

Describes Model MBD-6a demineralizer which is designed to deliver water of measured low conductivity at full line pressure where requirements are not great enough to justify a large demineralizing installation. Bulletin 4553 Permutit Co., Inc., 50 W. 44th St., New York 36, N. Y.

Link-Belt Spray Nozzles

Shows their complete line of spray nozzles and includes information on their new Quik-Clamp non-clogging spray nozzle, as well as the standard U-bolt type. Also includes dimension tables, nozzle discharge vs. pressure, spray width and specifications as well as installation instructions. Folder 2986. Link-Belt Co., Dept. PR, Prudential Plaza, Chicago 1, Ill.



Model CR-350 Bantam

Describes and illustrates this 11-ton Model CR-350 self propelled, crane-excavator and attachments. Bulletin CR-350. Schield Bantam Co., Waverly, Iowa.

Minerals & Chemicals Products

Presents the physical and chemical properties of all of their standard aluminum silicate pigments, Attapulgus clays, activated Bauxites, and limestone products. Also lists names and addresses of 35 distributors in the U. S. and Canada. Condensed Catalog. Minerals & Chemicals Corp. of America, Essex Turnpike, Menlo Park, N. J.

Power-Pak Automatic Boilers

Describes these packaged automatic boilers with a range of 15 to 25 h.p. Designed for low-pressure steam or hot water heating, these units include integral oil, gas or combination firing equipment and a wide selection of control and safety features. Bulletin. Orr & Sembower, Inc., Reading, Pa.

Bailey Control Drives

Describes four sizes of control drives, producing torques from 50 to 2250 ft.-lbs., and suitable for special high temperature applications to 250F. Revised Specification P81-1. Bailey Meter Co., 1050 Ivanhoe Rd., Cleveland 10, Ohio.

Writing and Publishing Your Technical Book

50p Manual. This was written to help authors organize and develop their ideas for books to the point where they can obtain the support and backing of a publisher. Also answers questions about the author-publisher relationship and presents practical checklists for preparing material for publication. A free copy may be obtained upon application to Dodge Books, F. W. Dodge Corp., 119 W. 40th St., New York 18, N. Y.

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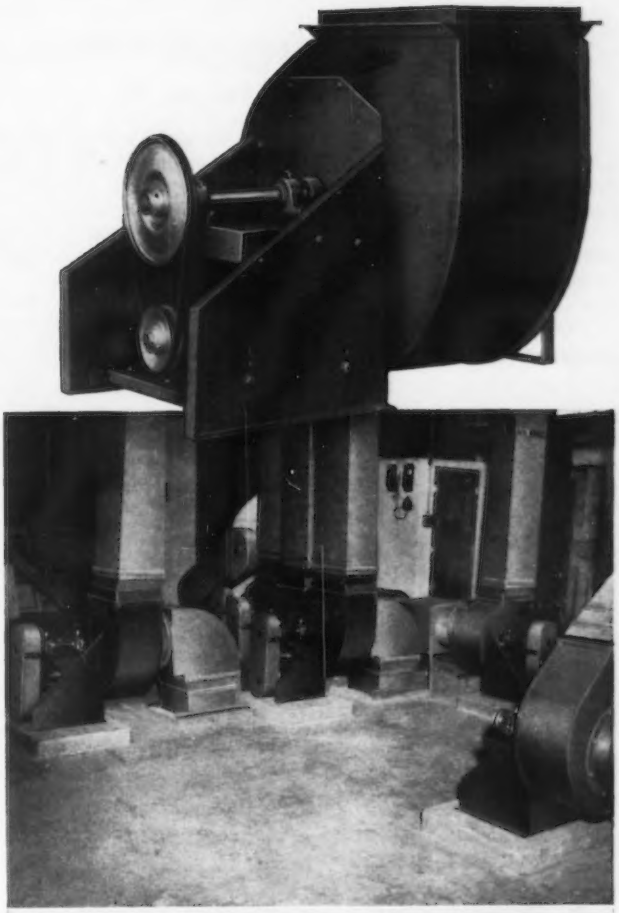
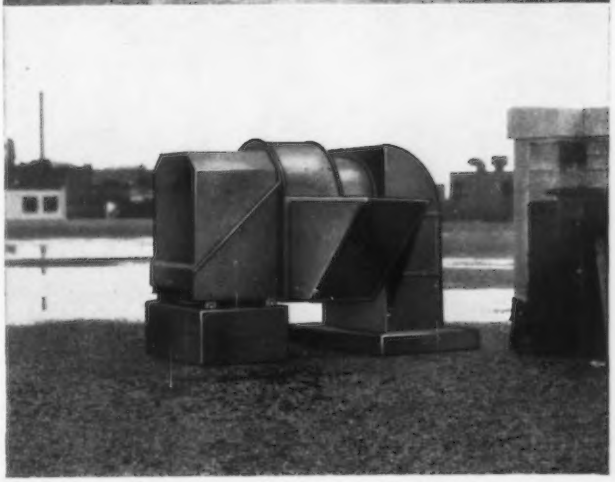
SHAF-TITE® ROLLS
METAL ■ RUBBER ■ WOOD ■ PLASTIC
RODNEY HUNT MACHINE CO., 10 MAPLE ST., ORANGE, MASS.

Easy-To-Install, Reliable, Low-cost "BUFFALO" Belted Vent Set "Packages"





"Buffalo" Belted Vent Sets are uniquely flexible "packages" readily adaptable to a wide variety of ventilating and air conditioning jobs:

- **Smaller, Independent Systems**
- **Larger Systems with Variable Needs**
- **Separate Systems in Different Areas**
- **Indoor or Outdoor Installations**

"Buffalo" Belted Vent Sets are easy-to-install because they are shipped as compact, self-contained, "ready-to-set-up-and-operate" packages. Each unit is complete with fan, motor and V-belt drive.

Service problems are minimized because these dependable units are ruggedly built throughout. Heavy-gauge steel housings, oversize shafts and bearings contribute to a long, useful life of maintenance-free operation. This adds up to far fewer service "headaches" for you.

Performance is outstandingly quiet, efficient, economical. This is the result of Buffalo's "big fan" features: smoothly-curved inlet vanes reduce turbulence—backward-curved blades give non-overloading characteristic — factory-balanced wheels minimize vibration.

Capacities range from 500 to 20,000 cfm. Adjustable pitch motor sheaves permit variable capacities for future needs. Can be supplied with special protective coatings or special materials for use as fume hood exhausters.

Investigate the many advantages of "Buffalo" Belted Vent Sets. Contact your nearby "Buffalo" engineering representative, or write for Bulletin 3720-A.

Upper photo: Multiple indoor installation of "Buffalo" Belted Vent Sets. *Lower photo:* "Buffalo" Belted Vent Sets are available with all-weather drive cover for roof or other outdoor installations.

"Buffalo"

BUFFALO FORGE COMPANY

Buffalo, New York

Buffalo Pumps Division, Buffalo, New York

Canadian Blower & Forge Co., Ltd., Kitchener, Ont.

VENTILATING • AIR CLEANING • AIR TEMPERING • INDUCED DRAFT • EXHAUSTING
FORCED DRAFT • COOLING • HEATING • PRESSURE BLOWING

TAPPI Engineering Conference Program

(Continued from page 35)

"Process Understanding Required for Systems Engineering," by J. O. Hougen, Monsanto Chemical Co., St. Louis, Mo.

"Computer Control in the Pulp and Paper Industry," by T. M. Stout, Thompson-Remo-Wooldridge Products Co., Los Angeles, Calif.

"Analog Simulation of a Complex Level Control System," by K. I. Mummé and L. W. Zabell, Kimberly-Clark Corp., Neenah, Wis.

"The Application of a Unique Analog Computer to Product Distribution," by C. E. McCarty, Scott Paper Co., Chester, Pa.

Engineering Division Luncheon J. R. Curtis, Scott Paper Co., Chester, Pa., Division Chairman.

Speaker; J. R. Curtis "Today's Challenge to Engines in the Paper Industry."

FIFTEENTH SESSION: Chemical Engineering II, A. W. Plummer, Hudson Pulp & Paper Co., So. Windham, Me., Chairman.

"Post Pressure Roll Yankee Drier Sheet Consistency Determination by Material and Enthalpy Balance," by W. A. Dickens, Kimberly-Clark Corp., Neenah, Wis.

"Wetting Agent Influence on Water in Sheets After Free Drainage," by R. V. Touchette, International Paper Co., Ticonderoga, N. Y., and L. C. Jenness, University of Maine, Orono, Me.

"Thermodynamic Properties of the System Na_2SO_3-$NaHSO_3$, by R. S. Morgan, Mohawk Paper Mills, Inc., Cohoes, N. Y.

SIXTEENTH SESSION: Drying, S. G. Holt, Consolidated Water Power & Paper Co., Wisconsin Rapids, Wis., Chairman.

"The New Airborne Flakt Drier," by G. E. Jackson, Bowaters Southern Paper Corp., Catawba, S. C.

"Static Pressing of Wet Sheets and Felts," R. E. White, Villanova University, Villanova, Pa., and F. W. Berdux, C. K. Williams Co., Easton, Pa.

"Survey of Non-Destructive Testing Methods," by D. M. McCutcheon, Westinghouse Atomic Power Div., Pittsburgh, Pa.

"Progress Report on Project No. 505—Drying Rates of High Pressure Driers" by L. G. Janett, J. O. Ross Engineering Corp., Chicago, Ill.

SEVENTEENTH SESSION: Corrosion II, E. W. Hopper, Pittsburgh, Pa, Chairman.

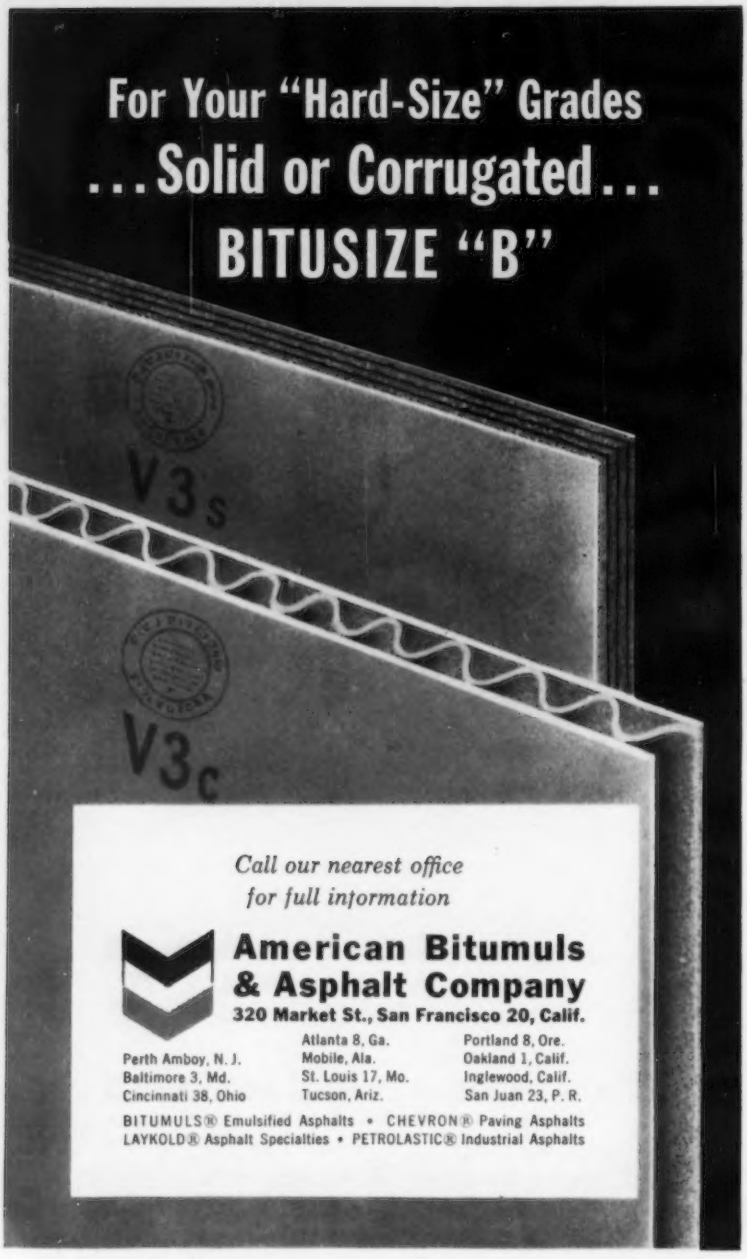
"Overlay Repair of Alkaline Pulping Digesters." Moderator: E. W. Hopper; Panel: Z. Blanchard, Portland Co., Portland, Me.; H. M. Canavan, Mutual Boiler & Machinery Ins. Co., Waltham, Mass.; E. G. Holmberg, International Nickel Co., Inc., New York, N. Y.; D. Innes, International Paper Co., So. Kraft Division, Mobile, Ala.; W. H. Parker, Hartford Steam Boiler & Ins. Co., Hartford, Conn.; P. Zouck, Alloy Cladding Co., Baltimore, Md.

DIVISION STAFF DINNER.

Thursday, October 15, 1959

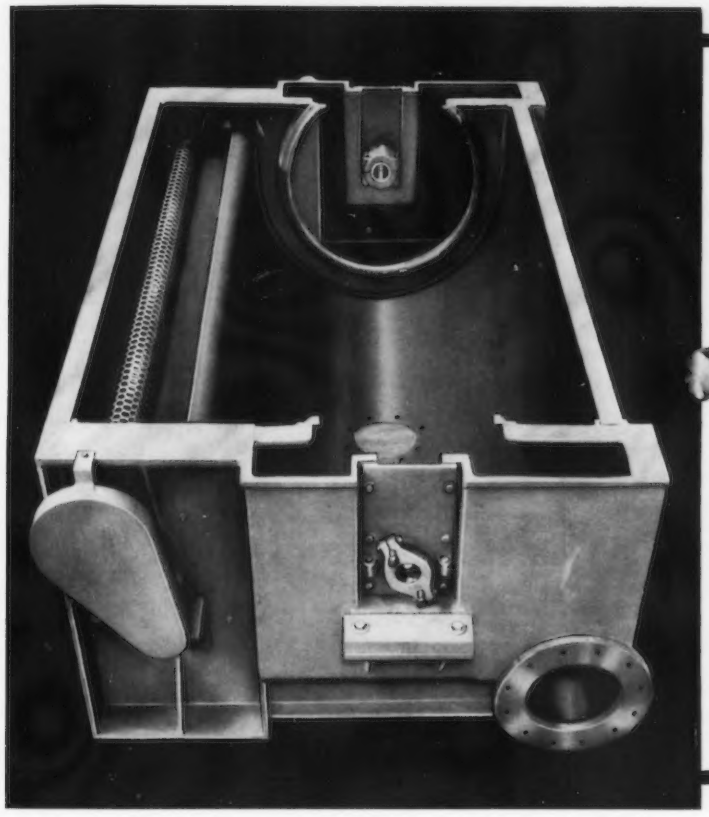
MILL TOUR A: Jessop Steel Co., Washington, Pa.; National Annealing Box Co., Washington, Pa.

MILL TOUR B: Westinghouse Test Nuclear Reactor Site, Waltz Mills, Pa.; Westinghouse Research Lab, Pittsburgh, Pa.



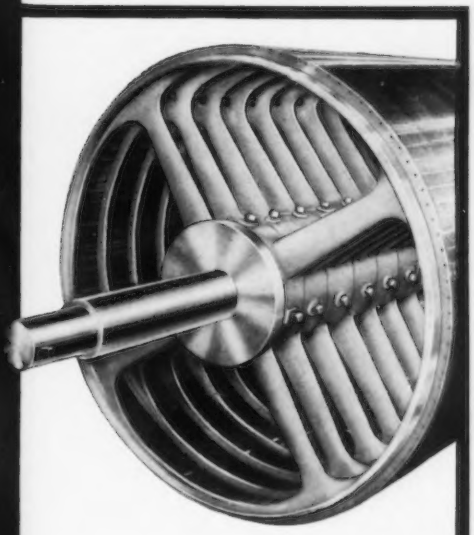
SANDY HILL CYLINDER MOULD VATS

help you make better paperboard



SANDY HILL VATS offer superior inflow and outflow capacity. Inflow distributor roll gives better fiber dispersion and uniformity of cross-machine caliper. Can be all stainless steel, cast iron ends with cypress circle and baffles, or copper-or-monel-lined cypress.

Illustration shows counterflow vat. Direct flow vat available.



CYLINDER MOULDS have streamlined spiders on a large-diameter shaft with anti-friction bearings. Special construction assures rigidity of spider. Together with Sandy Hill vats, they offer *final* control in determining sheet formation.

Tell us your vat requirements in terms of your product and your mill's production aims. Then, let us put your experience and ours together and see about reaching those aims in the most economical way. This kind of cooperation has led to more profitable mill operation in every part of the country!

• ***Phone or write today, for full information.***

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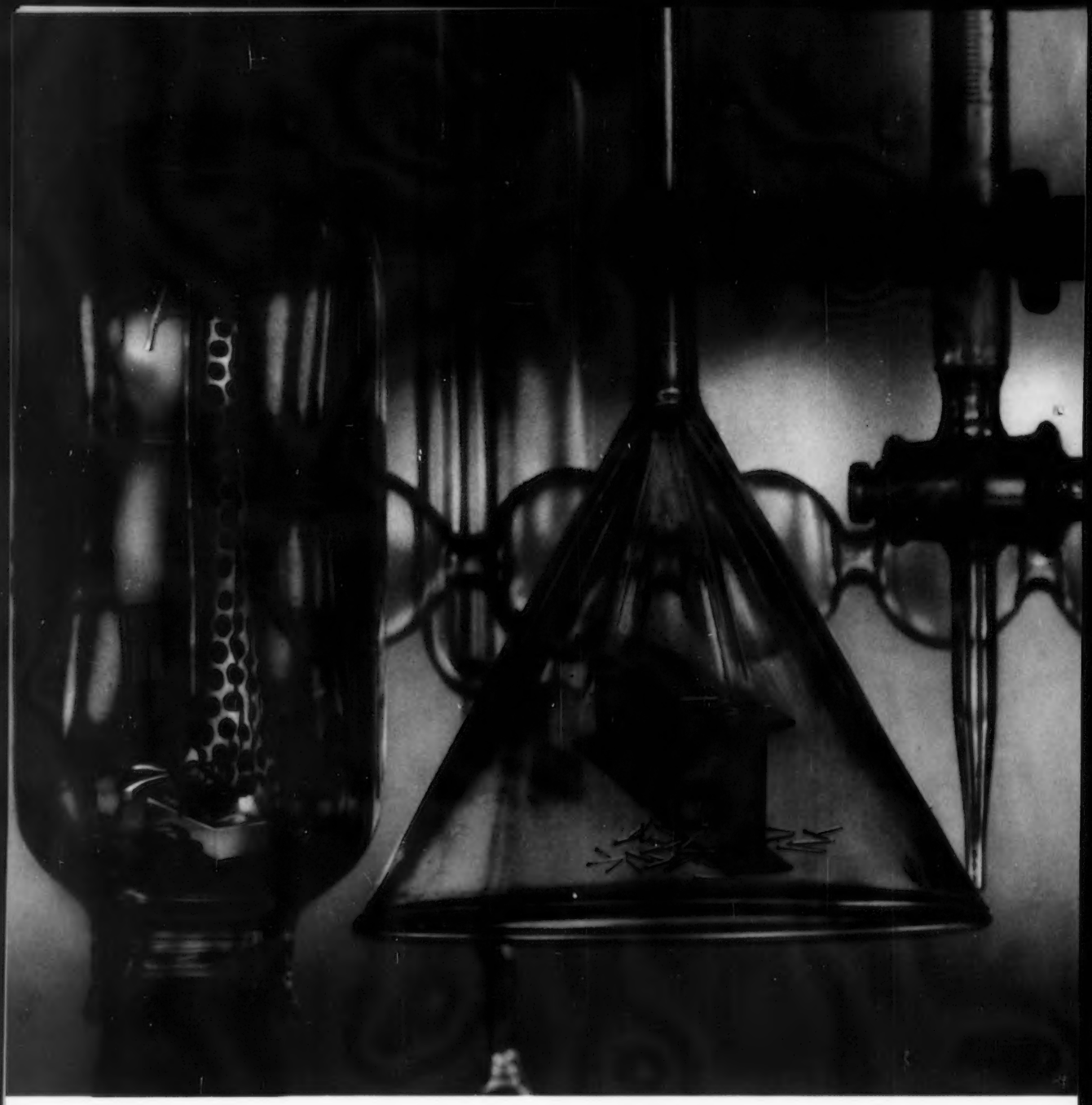
IRON AND BRASS WORKS
HUDSON FALLS, N. Y.

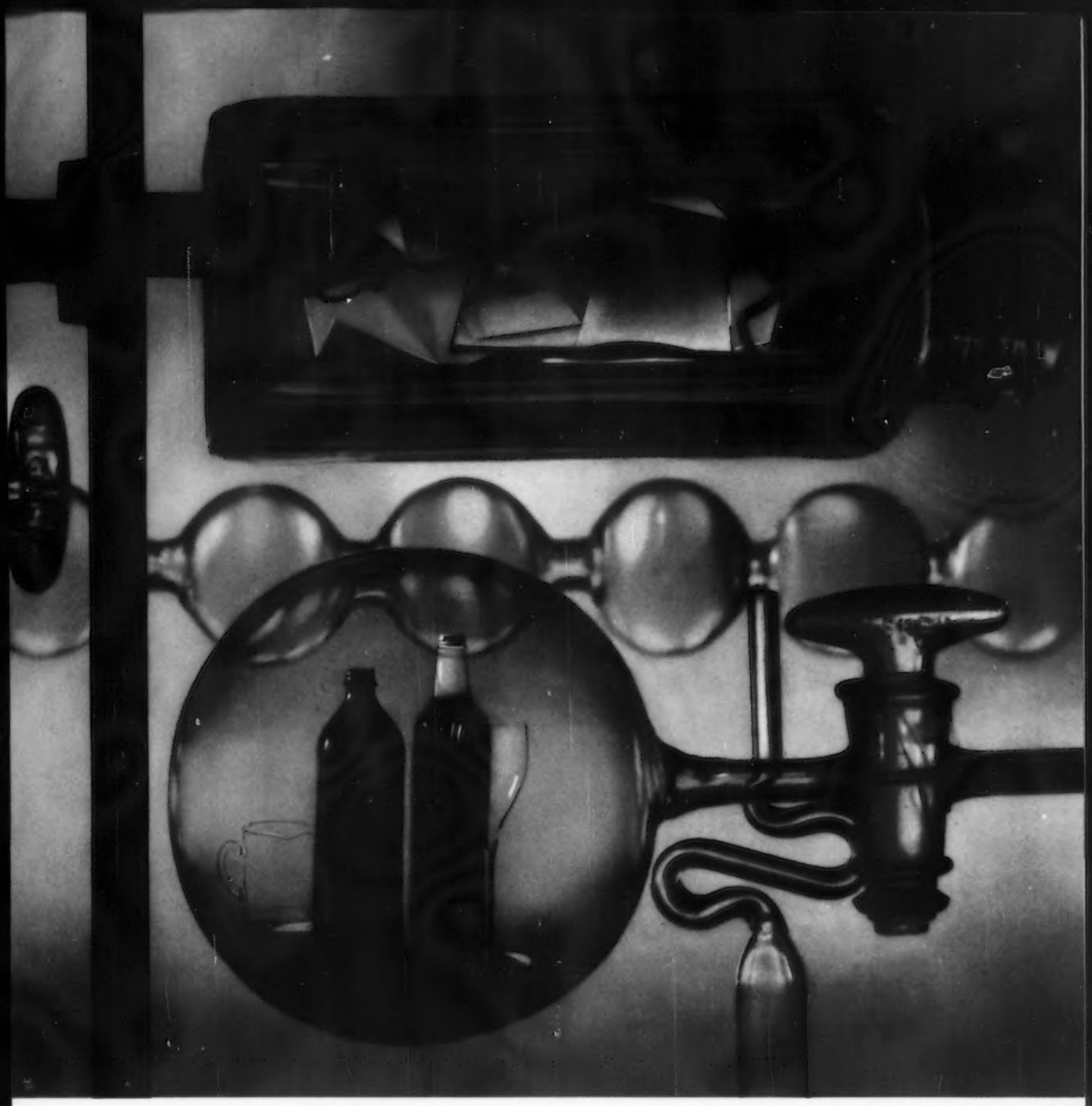


COLUMBIA-SOUTHERN CHEMICALS ANSWER

LOWER COSTS, BETTER PROFITS . . . however you analyze it, dollars saved in processing show up clearly on the balance sheet. That's the big reason you look so closely at the total "package" you get when you buy such essential materials as chemicals.

Product purity? Meeting or exceeding your tightest specifications, shipment after shipment. Dependability of supply? Delivery from plants or terminals meshed exactly to your schedules. Geared to your handling and use? Widest range of forms, concentrations, land or water shipment. And vitally important . . . ideas and technical help? Instantly available through every district office, or direct from Pittsburgh: experienced, practical specialists with a keen eye to the economics of your specific operation. All this, from whom? Why, of course:

Columbia-Southern Chemical Corporation, One Gateway Center, Pittsburgh 22, Pennsylvania. Offices in fourteen principal cities. In Canada: Standard Chemical Limited.



DOLLAR-DRAINING PROCESSING PROBLEMS

CAUSTIC SODA and its voracious appetite work thriftily to produce textiles, packaging films, petroleum products, innumerable goods.

CHLORINATED SOLVENTS are used in such divergent operations as degreasing metal products and dry cleaning delicate gowns.

SODA ASH is indispensable to the manufacture of glass, soaps and detergents, metals, pigments, other chemicals.

CHLORINE regroups molecules for economical processing of paper products, solvents, plastics, wonder drugs, hundreds of products.

COLUMBIA-SOUTHERN CHEMICAL CORPORATION

A Subsidiary of Pittsburgh Plate Glass Company

Anhydrous Ammonia, Barium Chemicals, Benzene Hexachloride, Calcium Chloride, Calcium Hypochlorite (Pittchlor®, Pittabs®), Carbon Tetrachloride, Caustic Potash, Caustic Soda, Chlorine, Chlorinated Benzenes, Chloro-IPC, Chrome Chemicals, Hydrogen Peroxide, Muriatic Acid, Pacific Crystals, Perchlorethylene, Rubber Pigments (Calcene®, Hi-Sil®, Silene®), Soda Ash, Sodium Bicarbonate, Sodium Sulfate, Titanium Tetrachloride, Trichlorethylene

CS-5170-8

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achievement

in the dryer felt field . . .

SYNTHETIC REINFORCED
WOODBERRY 403
FULL-FACED ASBESTOS DRYER FELT

Outstanding Construction
This full-faced asbestos felt is reinforced with fine synthetic yarn, individually selected for each component to provide perfect balance throughout. The overall construction is a tried and proven pattern specifically designed for optimum drying efficiency.

Outstanding Wearability
The asbestos face of Woodberry 403 protects the felt from the hazards of excessive heat. In addition, its sturdy synthetic reinforcing minimizes the effects of abrasion, and provides superior resistance to chemical degradation.

Outstanding Porosity
The Woodberry 403 combines an open, porous construction with the extremely high wicking capability of asbestos to produce what is probably the fastest drying dryer felt on the market today.

Outstanding Finish
A special finishing treatment, developed by Mount Vernon Mills, provides Woodberry 403 with optimum stability and drying characteristics.

Outstanding Efficiency
The superior construction, wearability, porosity and resistance of Woodberry 403 all contribute to its virtually unsurpassed drying efficiency, and its growing reputation as the finest all-purpose heavy-duty dryer felt yet developed.

Like all Mount Vernon Dryer Felts, Woodberry 403 is available, pre-stretched and pre-shrunk, with or without clipper seams.

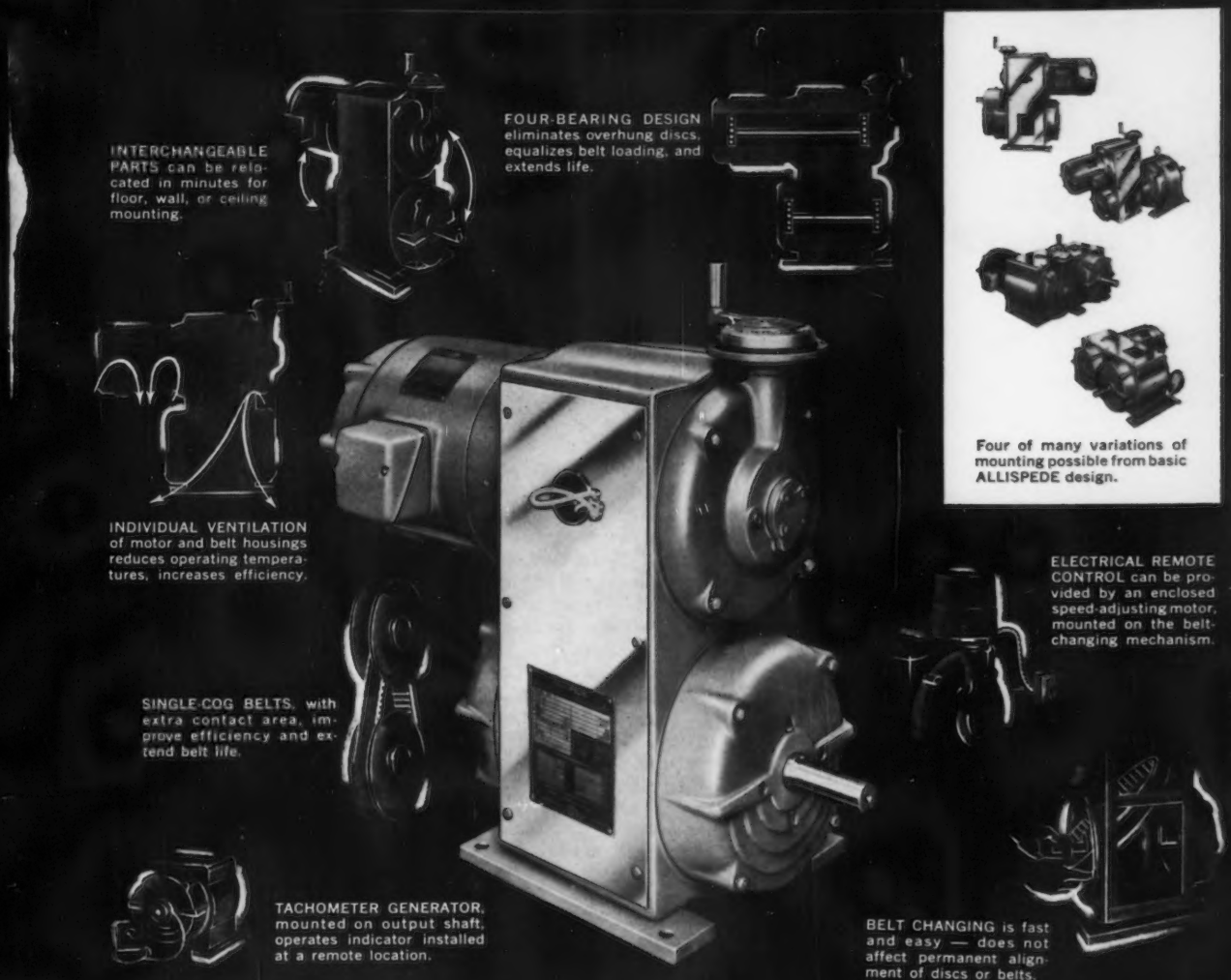
Call, Write or Wire For Complete Details About Woodberry 403 Today!

UNIFORMITY Makes The Big Difference In Industrial Fabrics

Mount Vernon Mills, inc.
A LEADER IN INDUSTRIAL TEXTILES

TURNER HALSEY COMPANY
Selling Agents

Main Office: 40 Worth Street, New York, N. Y.


INTERCHANGEABLE PARTS can be relocated in minutes for floor, wall, or ceiling mounting.
FOUR-BEARING DESIGN eliminates overhung discs, equalizes belt loading, and extends life.
INDIVIDUAL VENTILATION of motor and belt housings reduces operating temperatures, increases efficiency.
SINGLE-COG BELTS, with extra contact area, improve efficiency and extend belt life.
TACHOMETER GENERATOR, mounted on output shaft, operates indicator installed at a remote location.
ELECTRICAL REMOTE CONTROL can be provided by an enclosed speed-adjusting motor, mounted on the belt-changing mechanism.
BELT CHANGING is fast and easy — does not affect permanent alignment of discs or belts.
Four of many variations of mounting possible from basic ALLISPEDE design.

Let's look at the features of the ALLISPEDE* Drive

New Louis Allis drive offers accurate control—maximum belt life—long-run economy—low-cost versatility—ease of installation

Here's a drive so easily adaptable to changing physical and operating needs that it obsoletes obsolescence. You can relocate components — add or remove attachments and controls — in the field, in minutes.

Its *all-new* design improves performance and efficiency. Inspection, servicing, and belt-changing are a snap. Furthermore, maintenance is almost nil.

As for versatility — there's an Allispede to meet whatever mechanical drive requirement you have. Sizes up to 30 hp, output speeds from 1 to 10,000 rpm, and speed ranges up to 8:1. Motors can be open, drip-proof, enclosed, or explosion-proof—with ventilated or enclosed belt housings — for foot, P-base, C- or D-flange mounting on your machine.

Allispede is available with parallel shaft, or right-angle, integral speed reducers; special shaft extensions; integral magnetic brakes; electrical or mechanical remote control, and other modifications.

Interested? Contact your nearby Louis Allis District Office or write to The Louis Allis Co., 467 East Stewart Street, Milwaukee 1, Wisconsin, for a copy of Bulletin 3600.

*Allispede is a trademark of The Louis Allis Company.

LOUIS ALLIS

MANUFACTURER OF ELECTRIC MOTORS AND ADJUSTABLE SPEED DRIVES

ASD-133

PJT NEWS OF SUPPLIERS

Allis-Chalmers Mfg. Co. announces the election of two new officers and the advancement of two other officers by the board of directors.

Elected senior vice presidents of the company were Boyd S. Oberlink and J. L. Singleton. Both previously were vice presidents.

Roy M. Casper, general manager of the firm's Atomic Energy division and L. W. Davis, general manager of the Farm Equipment division were both elected vice presidents.

Diamond Alkali Co. announces the appointment of Rex Williams, Jr., as sales service representative in its Southeastern district sales office. Already working at his new post, Mr. Williams' territory includes the state of Alabama and the northwestern tip of Florida. He replaces William N. Chastain who moves on to Charlotte, N. C., as a Diamond salesman.

Mr. Williams joins the Diamond organization with a year and a half experience in sales work.

Also announced are two staff appointments in Diamond Alkali's general sales and market planning department, Cleveland.

John R. McCullough, field salesman headquarters at the company's Pittsburgh sales office, is named special staff assistant to the director of sales.

David F. Hahlen, a junior engineer in Diamond's Soda Products development group becomes an analyst in the market planning group of the general sales department, a newly created position.

Mr. McCullough is a 20-year Diamond veteran who started with the company in Pittsburgh. In 1946 be became assistant office manager at the Philadelphia branch sales office, transferring in 1953 as a senior salesman to the Pittsburgh office.

Mr. Hahlen came to the Diamond organization in 1956. He is a graduate of Case Institute of Technology, Cleveland, where he earned his B.S. degree in Chemical Engineering in 1952.

Link-Belt Co. announces that Charles W. Beauchamp has been appointed marketing manager and will head up all sales activities of its Ewart plant in Indianapolis. Kendrick M. Hickman has been appointed sales manager. The appointments follow the retirement of Forest H. Spencer after 40 years of service.

Mr. Spencer, who has been sales manager of the Ewart plant, joined Link-Belt in 1918. After 10 years as head of the estimating department, he entered the sales department and became assistant sales manager and division sales manager prior to his elevation to sales manager in 1948.

Mr. Beauchamp started at the Ewart plant while attending the University of Cincinnati from which he received his degree in mechanical engineering in 1933. He has worked successively in the Link-Belt Indianapolis Dodge plant and in district offices in Philadelphia and in Boston where he was district manager from 1943 to 1948. He has been assistant sales manager for the Ewart plant since 1948.

Mr. Hickman began his Link-Belt career at the Ewart plant in 1927 and served in the company's Chicago and Detroit offices before returning to the plant in 1946. He was appointed manager for agricultural sales in 1950 and assistant sales manager for the Ewart plant in 1952. He attended Purdue and Butler Universities and the Illinois Institute of Technology. He is a member of the American Society of Agricultural Engineers.

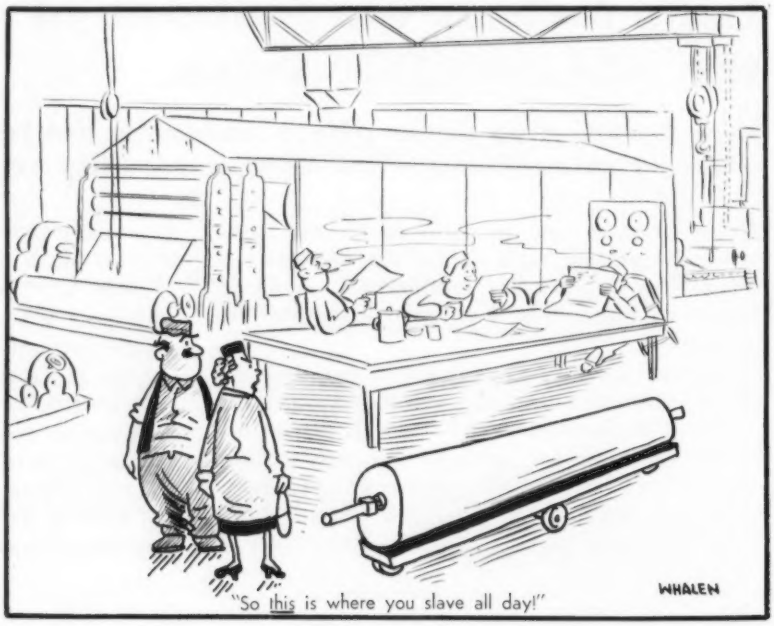
C. W. Beauchamp

K. M. Hickman

F. H. Spencer

R. G. Taber

Beloit Iron Works has named Robert G. Taber an eastern sales representative for the firm. Mr. Taber has been associated with Beloit for 15 years as an engineer and salesman.



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FINEST PAPER NAPKINS...

begin with Glidden Zopaque® Titanium Dioxide

Paper napkins and other special paper products look better, sell faster when pigmented with Glidden Zopaque Titanium Dioxide—the whitest white pigment available.

Zopaque imparts high opacity, gives maximum whiteness and brightness to any paper product. And the finer, consistently uniform Zopaque particles are readily dispersible.

Write for complete details on the grades of Zopaque specially developed for beater addition and coatings.

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MONTREAL
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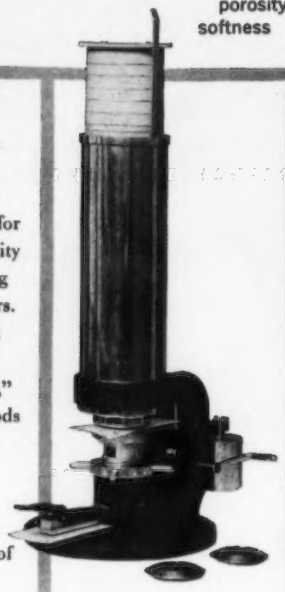
1 INSTRUMENT *for Testing* smoothness porosity softness

Simply interchanging the lower test plates of the Gurley-Hill S-P-S Tester converts this instrument for testing smoothness, porosity or softness of any printing and most industrial papers. Meets TAPPI and ASTM "Suggested Method for Determining Smoothness," as well as standard methods for finding air resistance or porosity.

Write for Bulletin 1400, describing complete line of Gurley paper testers.



W. & L. E. Gurley, *520 Fulton Street, Troy, N.Y.*

4 STAINLESS SCREEN PLATES by **MAGNUS**

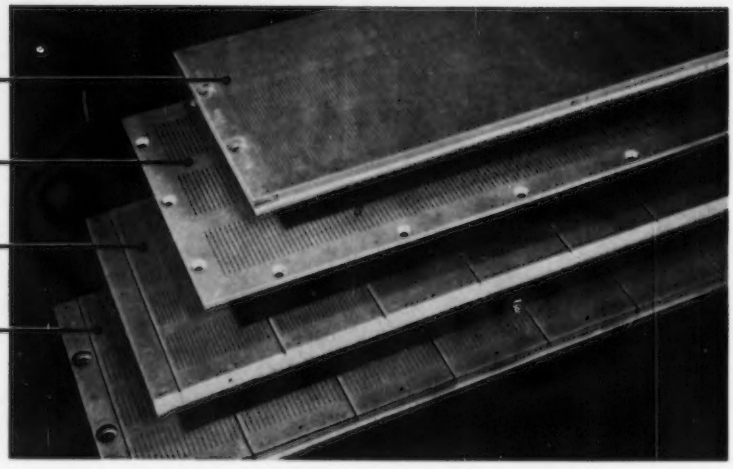
for **Maximum Flow of Cleaner Pulp** on any type of job!

5/32" MULTI-SERVICE PLATE – T-bar Style, solid, one-piece top, stronger than bronze, with wide relief milling for high capacity, and the corrosion resistance of 100% stainless steel construction.

1/4" SOLID PLATE – The heavy, one-piece, stainless steel plate with built-in higher strength and longer life.

5/8" BEVELED CHANNEL PLATE – Thin-sheet, fabricated design eliminates relief milling and permits increased screening capacity.

5/8" T-BAR CHANNEL PLATE – High-strength, thin-sheet fabricated design, similar to the above except with T-bar channel frame.



MAGNUS Screen Plates, made of stainless chrome-nickel-steel, are your best assurance of consistently higher yields of cleaner pulp at low operating cost. That's because slots remain sharp and side walls highly polished for the life of the plate. And plates last longer because of their extremely high resistance to corrosion. Leading paper makers from coast to coast know that it pays to specify MAGNUS for all types of screen plates — stainless, inconel or bronze, for flat or rotary screens and for all types of standard fastening methods. Write us for complete information.

MAGNUS METAL CORPORATION
Fitchburg, Massachusetts
Subsidiary of **NATIONAL LEAD COMPANY**

Metalworkers for the Paper Trade
SCREEN PLATES: BRONZE · CHROME-NICKEL-STEEL · AND INCONEL
VALVES: GATE · SWING CHECK · BLOW · GLOBE · ANGLE AND "Y"

THE COWAN CENTRIFUGAL PULP SCREEN

Available in three sizes:

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Mark "E," Medium

Cowan Junior, Small

For all types of Pulp and with Components made from alloyed materials to suit.
SIXTY PERCENT MORE OR LESS OF WOOD PULP, WORLD-WIDE, IS NOW PROCESSED ON COWAN SCREENS.

Complete Bulletin D-600 yours for the asking.

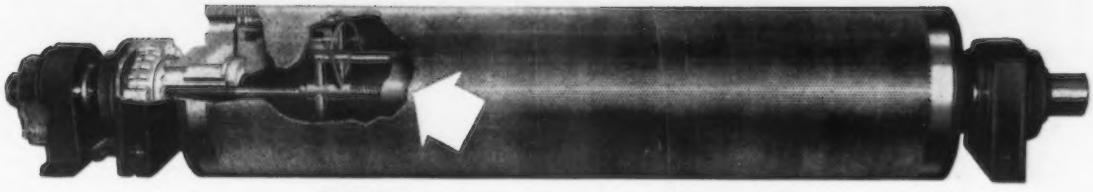
AUTHORIZED BUILDER

MONTAGUE MACHINE CO.

Turners Falls, Mass.

Licensed Producer of Ductile, Ni-Resist and Ductile Ni-Resist Iron.

Specify L-G CUSTOM-BUILT EQUIPMENT FOR EVERY MILL REQUIREMENT



NEW SUCTION ROLL DESIGN
ASSURES LONGER, TROUBLE-FREE SERVICE

- **SEAL STRIPS**—provide uniform water seal and lubrication to reduce shell friction and wear; assure better water removal with less power. Need no adjustment.
- **MAINTENANCE-FREE INTERNAL BEARINGS**—water-lubricated, require no bearing seal or greasing. Made of special resinous wear resistant material.
- **FORGED ALLOY STEEL HEADS**—set-in studs and recessed nuts protect felts, assure operator safety. Designed with open-end ports for easy inspection, easy strip removal.

900

WRITE TODAY *for free brochure describing L-G's improved Suction Roll design and other machinery building facilities.*

Complete machine repair and reconditioning services also available.

Phone: COATESVILLE 1877
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LAYTON-GREENFIELD, INC.
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from tree to paper
SPRAYING SYSTEMS CO.

SPRAY NOZZLES

will help lower your costs

For every operation in spraying, from the heavy impact needed in debarking to the exactly controlled volume, distribution and spray angle essential in web spraying . . . Spraying Systems spray nozzles offer many advantages. Choice of capacities and selection of types is far greater in range . . . exclusive design features result in better performance. For complete information write for Catalog 24.

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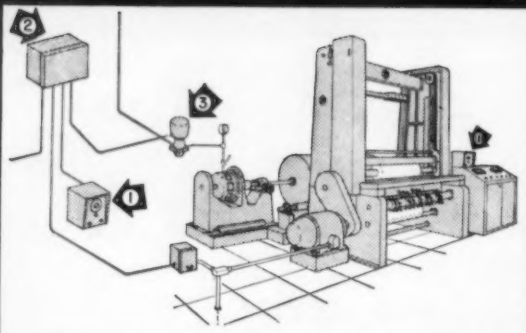
If you have a special problem, write and let us know. Data Sheets are available covering a wide range of applications . . . or a field sales representative will be glad to call.

Dilts CONS-TEN-TROL*



NEW UNWIND TENSION CONTROL SYSTEM
FOR SLITTER-REWINDS

Compact, low cost electro-pneumatic system for controlling tension on paper, plastic, film, foil and fabrics.

EASY TO OPERATE

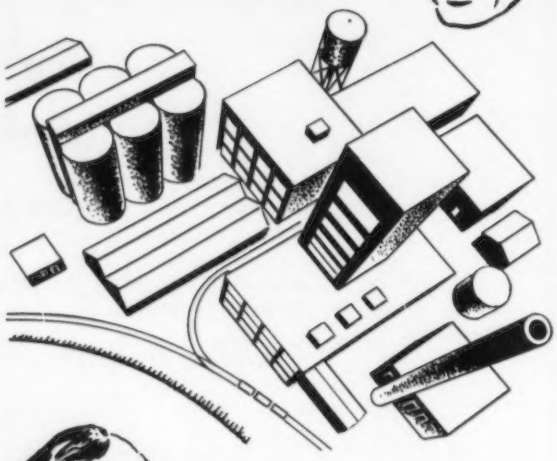
1. Set desired tension on Selection dial.
2. Setting controls winder drive motor load equivalent to desired tension in web through control box and amplifier.
3. Automatically adjusts air pressure to unwind friction brake and provides constant web tension from full roll to empty core on unwind.

Write for Spec. Sheet 117

THE BLACK-CLAWSON COMPANY
DILTS DIVISION, FULTON, N. Y.

*Trade mark. Pat. applied for.

How do you measure calender roll performance?



". . . by the finish on the sheet"

Take it from the purchasing agent. He sees fewer requisitions for "refills" with Butterworth Dura-Smooth Rolls on the stacks.

You can rate Butterworth Rolls in an easy test under your own operating conditions. Put one Dura-Smooth Roll on your calender stack with any other roll. Check the results: long hours of extra service without requiring turning down or refilling, better finish, more uniform production.

Butterworth Calender Rolls are made to specifications, using only the finest materials, and tested for hardness, smoothness and density before delivery.

Write now for a quotation on new or refilled Butterworth Calender Rolls. We can furnish them for all makes of calenders.

H. W. BUTTERWORTH & SONS CO.
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BUTTERWORTH CALENDER ROLLS

PAPER TRADE JOURNAL

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HELP WANTED—$1.25 a line. Minimum charge $5.00.
SITUATIONS WANTED—$1.25 a line. Minimum charge $5.00. If repeated ½ rate will be charged for each consecutive repetition.

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Classified advertising space may also be purchased at $7.00 per single column inch. All classified advertisements are payable in advance
If box number is used—75 cents additional
Address replies to advertisements appearing under Box Number in care of PAPER TRADE JOURNAL, 49 West 45th Street, New York 18, N. Y.

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PAPER MEN

$5,000 to $50,000

SALES • PRODUCTION • TECHNICAL

Finding and landing THE ONE BEST JOB requires sound analysis, careful planning, proper contacts and skillful negotiation.

Paper men ourselves, and the only recognized professional specialists in the world in our particular field, we assist responsible paper men to accelerate their careers by uncovering and developing THE SPECIFIC SITUATION that most exactly fits the needs of each individual we serve.

If you seek to better yourself, and your performance to date entitles you to our endorsement, we can and will help you. Contact us in absolute confidence for information regarding procedure.

GEO. M. SUNDAY & ASSO.

PERSONNEL CONSULTANTS TO THE PULP, PAPER & ALLIED INDUSTRIES
6 East Monroe, Chicago ANdover 3-1970

Chemical Engineer or Chemist

Splendid opportunity with leading coated paper manufacturer in Lake States area. Several years industrial experience desirable but not essential. Activities will include laboratory and mill research and development. Send detailed resume to: Box 59-261, c/o Paper Trade Journal.

S-28

Read the Clearing House Columns of Paper Trade Journal.

Whether your problem be Hiring, Selling or Buying, these columns can help you.

Others have—now you try it.

Help Wanted

CHEMICAL ENGINEERS, PAPER CHEMISTS, CHEMISTS
THE MEAD CORPORATION

has challenging staff positions in expanding Research and Development Department for experienced men in the fields of

1. **Coated Printing Papers**
2. **Paper Technology—involving the improvement of the physical properties of paper**
3. **New Products**

Mead offers opportunity for recognition and growth with friendly working and living conditions. Location, Chillicothe, a pleasant town of 28,000 in southern Ohio. Your inquiry with full resume will receive immediate, confidential attention. Write to:

Hugh A. Mellinger, Technical Employment Supervisor
THE MEAD CORPORATION Chillicothe, Ohio S-28

SYSTEMS ENGINEER

Young Engineer, paper mill experience preferred or a knowledge of steam and control systems to assist in design and specifications and train for Sales Engineering. Requires some travel. We are a division of a potential growth corporation. Located in Ohio. Submit resume to Ross Midwest Fulton, a Division of Midland-Ross Corporation, 918 Woodley Road, Dayton 1, Ohio. Telephone: CLearwater 2-5603.

O-5

INDUSTRIAL ENGINEER

Industrial Engineering Degree required. Minimum of 3 years experience in Paper Industry, including Cost Reduction, Work Measurement, Wage Incentives, Machine Evaluation and Layout and Job Evaluation.

Northern New England Location. All replies treated completely confidential. Submit complete resume to Box 59-266 care Paper Trade Journal.

S-21

MACHINE TENDER

For small Fourdrinier machine running Towel and Napkin grade, located Bloomfield, N. J. Steady work—Liberal Co. Paid Benefits. Reply promptly stating experience, age and salary expected to Box 59-263 care Paper Trade Journal.

S-28

Help Wanted

EXCELLENT OPPORTUNITY FOR

Technically trained man for technical sales-service customer contact work in coated printing papers. Background should be in pulp and paper. Printing knowledge helpful but not necessary. Position demands a personable and tactful individual with desire to progress in an expanding organization. North-central mill location. Please send resume including education, experience and salary requirements. All replies confidential. Reply Box 59-262 care Paper Trade Journal.

N.C.

PAPER MILL FOREMAN

Excellent opportunity for qualified paper maker with experience on fourdrinier machines—preferably with background in bleached, fine paper grades. Ideal geographical location with a progressive, rapidly expanding organization. Please send full resume of background and experience to— Employment Manager
Box 59-267 care Paper Trade Journal

S-21

MECHANICAL ENGINEER

Wanted as assistant to Plant Engineer in south-eastern paper mill. Work to be in fields of maintenance, construction, steam and electric power, and fire prevention and will involve design and drafting. Send resume, including education and paper mill experience to Box 59-268 Paper Trade Journal. S-21

BUY
U. S. SAVINGS BONDS

ENGINEERS AND DRAFTSMEN

MECHANICAL ENGINEERING SUPERVISOR

Graduate Mechanical Engineer to age 40 to serve in supervisory capacity in process piping, heating, ventilation, and mechanical design work. Paper mill experience required, with previous supervisory experience desirable. Must have ability to deal effectively with others.

PAPER MILL ENGINEER

Graduate Mechanical Engineer to age 40 with at least five years experience in paper mill design or maintenance.

CHEMICAL ENGINEER

Graduate Chemical Engineer to age 40, with experience in sulphite pulp process. Experience in sulphate pulp and by-product recovery processes desirable but not essential.

POWER PLANT ENGINEER

Graduate Mechanical or Electrical Engineer to age 40 for power plant design and selection of equipment. Experience with turbo-generators and recovery equipment desirable.

GRADUATE ENGINEERS TO AGE 35 ALSO WANTED WITH AT LEAST TWO YEARS EXPERIENCE IN ELECTRICAL, PIPING OR STRUCTURAL DESIGN.

DRAFTSMEN

High School graduates or better for structural, mechanical, electrical, or piping layout. Age to 35 with minimum of three years experience.

These positions provide long-term opportunities. Company is located in eastern Tennessee, in the heart of the beautiful Tennessee Valley. Excellent recreational and residential facilities throughout the area. Very favorable year round climate. Located near Great Smoky Mountains, and short distance from Chattanooga and Knoxville, Tennessee and Atlanta, Georgia. Liberal salary program with periodic merit increases. Complete insurance, retirement and vacation programs are established. All applications will be treated in confidence. Interviews will be conducted in areas of qualified applicants, or selected candidates may be asked to visit offices at Company expense.

Reply immediately, submitting summary of experience and qualifications to:

BOWATERS
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INDUSTRIAL RELATIONS DEPARTMENT
CALHOUN, TENNESSEE TF

GENERAL MANAGER-PAPER

(Overseas)

Our company has an outstanding opportunity for a General Manager experienced in the pulp-paper industry and interested in locating overseas.

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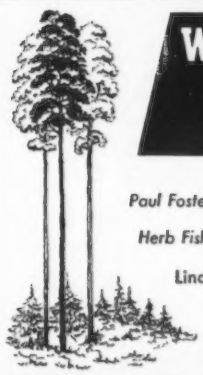

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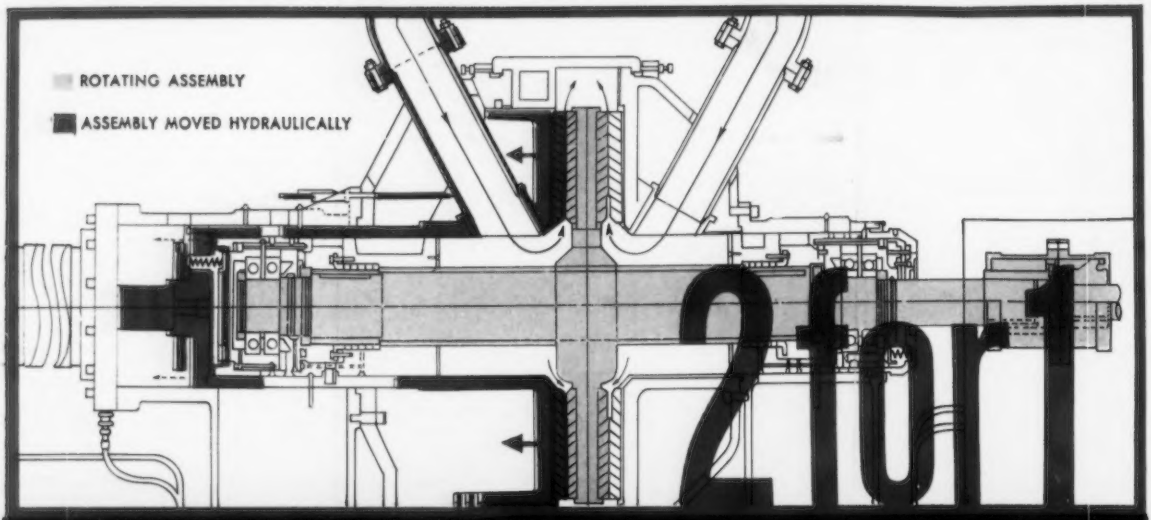

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